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Textile World

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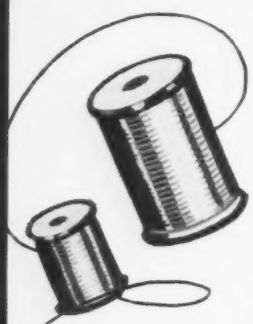

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TEXTILE WORLD

DOUGLAS G. WOOLF, Editor

All That Glitters Is Not Golden Fleece

THE NATIONAL ASSOCIATION OF WOOL MANUFACTURERS celebrates this month its 75th anniversary. But the effectiveness of that organization has far exceeded its length of years. The roster of its past-presidents, printed in these columns last month, speaks eloquently of the type of leadership it has enjoyed. Fortunately, it has today in its present president, Arthur Besse, a constructive force which promises well for its future. And it needs such promise.

Why?

Because this age-old industry faces today a challenge which makes all previous changes since the industrial revolution seem trivial by comparison. It faces the challenge of synthetic fibers, not only as a potential displacer of wool as a raw material, but more immediately and more dramatically as a threat to the position of the present group of wool manufacturers.

In the whole march of synthetics, there are two threats to things as they are and have been: One is a threat to the total consumption of natural fibers; the other is a threat to the industries which have been processing natural fibers.

Textile manufacturers can take the former threat in their stride. Although they may have become identified with specific natural fibers, they can become adjusted to the substitution of synthetics for the natural fibers they had previously processed. Witness the many "cotton" manufacturers who have become largely rayon manufacturers. Witness the "cotton bleacheries" which have become largely rayon finishing plants. Witness those silk hosiery manufacturers who are now adjusting their production to the utilization of Nylon and similar new synthetics.

But that other threat—the possible transfer of the manufacture of certain types of fabrics to other groups—is something else again.

One does not have to seek far for an analogy to the threat which today faces the wool manufacturing industry. It is found in the previously great silk manufacturing industry. Twenty years ago, the firms in that industry were powerful, prosperous, and apparently secure.

Along came rayon.

The then-existing silk manufacturers snorted at the intruder. Most of them refused to entertain the idea of turning over even a small part of their production to it. Those who did play around with synthetics tried to keep it quiet, even in their reports to textile directories.

The rest is history.

Cotton manufacturers—and, later, rayon weaving companies—took over a considerable part of the production of what may be termed silk-type fabrics. The silk manufacturers who had the vision and the guts to adjust themselves quickly to the advent of rayon were the exception, not the rule. The old silk industry, for all practical purposes, passed out.

What lesson can be learned from this by present wool manufacturers? The answer is easy.

At first, synthetics were merely a helpful adjunct to silk manufacture. They made silk-type fabrics available at low cost, and increased the total interest in, and consumption of, silk materials. But gradually other branches of the industry took over their manufacture.

Similarly, synthetics were at first merely a helpful adjunct, as a decoration, to wool manufacture. They made possible diversity of fabric types and enabled the wide-awake manufacturer to increase consumer appeal.

But today the story is different. The impetus to the use of rayon staple fiber, originating in the totalitarian countries due to their lack of natural fibers, has spread to this country. The statistics on consumption of such staples in this country during the last two years is eloquent testimony. The prediction, in our Annual Issue, of the probable consumption in the next decade, supported incidentally by experts, is far more eloquent.

Rayon staple, in wool manufacture, is no longer a decoration. It is, first, an adulterant, and it is becoming, increasingly, a substitute.

Even that fact would not in itself threaten the wool manufacturing industry if it were not for this other all-important fact: Other types of mills can take over the manufacture of wool-type fabrics—men's suitings, women's dress-goods, upholstery and drapery materials.

The start has been made. Several years ago a great southern cotton manufacturing company started weaving wool-mixture suitings. Others have joined in. Many more will, in the future.

WHAT CAN the present wool manufacturer do? He can liquidate. If some of the old-line silk manufacturers had liquidated back in, say, 1923, their stockholders would have been infinitely better off. But that is a negative answer. As an alternative, a wool manufacturer can sit idly by and watch the encroachment upon his business by cotton mills—and later by newly-organized companies similar to the rayon-weaving outfits which helped to sound the death-knell of the silk industry.

But, as another alternative, the wool manufacturer of today can adjust his production and sales policies so that he can meet any competition. That is the hard way. It means expenditure of huge sums for plant change-over. It means passing dividends in order to make those plant changes possible. It also means a shake-up in personnel, so that those individuals who

just want to stay on as wool manufacturers are retired as wool manufacturers emeritus.

Actually, wool manufacturers now have certain great advantages in this competition. They have styling skill and existing sales contacts. But to those must be added, principally, the physical ability to compete with other types of plants geared up for speedier and more efficient production.

Not all existing wool manufacturing companies can stay in the business. But a lot of them can, if their executives will study the silk manufacturing tragedy of the last 20 years.

In a prehistoric era, Jason found the Golden Fleece. To many wool manufacturers of the last 75 years, it has truly been a Golden Fleece. To the "wool" manufacturers of the next 75 years, all that glitters, in form of net income, will not be the Golden Fleece. Wool, as a material, is not yet definitely threatened by synthetic substitutes. But wool manufacturers, as a class, *are* definitely threatened by great groups of other textile manufacturers, both now existent and to come, who will make the Golden Fleece glitter for them.

This is not a very gracious anniversary message to the wool manufacturing industry. But it is a realistic one. And this is a realistic era.

P. S. We note that the National Association of Wool Manufacturers devoted a major part of its 75th anniversary program to speeches by three experts on synthetics. That shows an alertness in the industry which is most encouraging.

Headlines Won't Eat Up Cotton Surplus

WE DON'T LIKE to be negative on any attempt to increase the uses for cotton. But at the same time—and even more so—we don't like to see either the public or the cotton growers misled by false hopes.

And so we must take issue with the implications arising from the Department of Agriculture's campaign to popularize cotton hosiery for women. Publicized by head-lines in the daily press, and co-sponsored by legislators who see in it hope for their agricultural or industrial constituents, this campaign has been featured as an important potential factor in reducing the cotton surplus. It isn't.

Let's take the extreme possibility first. Suppose cotton hosiery became the only type used. That result would be disastrous to Japan's silk industry—and for that we hold no brief. But the total number of bales involved, while helpful, would not make an important dent in the existing cotton surplus.

It would help the mercerizers and the combed yarn spinners—and since they are two of the groups this publication serves, we would welcome this impetus to their business. But those groups, also, should not be misled by false hopes.

The hard, realistic fact is that women are not going to be converted to cotton hosiery. We have seen the first commercial product—"Government Style No. 106"—(see page 67) and we rush into the zone of women's fashions where only brave men like Mayor La Guardia dare to tread, and announce that women are not going to besiege the stores selling No. 106 as they did the Wilmington stores where Nylon hosiery was first placed on sale.

There is a place for cotton hosiery, and an increasing use can be developed by good styling and merchandising, but the net effect will not pull Henry Wallace out of the hole he has dug for himself, nor will it bring prosperity to the Cotton Belt.

THIS ONE EPISODE would not be worth all these words if it did not point a moral for "new uses" programs. Excellent as they are in principle, they are too often piddling in their effect on the whole picture; or uneconomic in their attempts to substitute a material for one which may be cheaper or more suitable or more in line with fashion demands; or unsound in their appeal to national or sectional pride or self-interest.

Cotton hosiery, cotton roads, cotton houses, cotton bags, and even cotton ice-cream, the latest of the head-liners, are all right in their way—but they will not solve the cotton problem, either for the farmer or the manufacturer.

If not, what will? The answer is easy. While experts play around with these minor projects, great uses of cotton are being usurped every day by other materials. Uses such as cotton towels, cotton table-cloths, cotton napkins, and a myriad of household products are being invaded by paper and other materials. Cotton as a material for tires is threatened. Cotton in many industrial uses is challenged by synthetics, by glass, and by other newcomers.

It should be easier to protect existing uses, than to give up those battlegrounds and try to develop new ones.

How can those erstwhile strongholds be held or recaptured? By better merchandising. We learn by the papers that the Department of Agriculture spent $60,000 in its experiments to "perfect" cotton hosiery. We believe that $60,000 could have been much better spent—from the standpoint of its primary purpose, help to cotton agriculture—if it had been employed as a promotional fund to make consumers and industries conscious of the many uses in which cotton has proved itself, rather than in an attempt to entice women to wear something they really don't want.

We believe the job of all the agencies involved in this problem—the U. S. Departments of Agriculture and Commerce, the Cotton-Textile Institute, the National Cotton Council, the Cotton Consumption Council, the State Departments of Agriculture, et al—should be focused toward one common objective: the maintenance and recovery and advancement of those markets which have made cotton the greatest textile fiber. The job will have to be on a realistic basis: proving to consumers that cotton will perform each particular function better and more cheaply than any other fiber.

Cason Callaway had the right idea years ago when he proposed a million-dollar-a-year campaign to promote cotton. It is almost, but not quite, too late. You can't force women to wear the cotton surplus on their legs. You can't force youth to eat it at the soda fountain. But you may still be able to prove to great masses of buyers of industrial, household and apparel fabrics, that cotton has not won its past laurels without reason.

And the "you" in this case means the agencies listed previously in this editorial: those organizations which are dedicated to the "save cotton" creed.

If there was not a tremendous social problem involved in the cause of cotton agriculture, we would be inclined to yawn and say "What does it matter?" But since it does matter, we urge all those groups to forget that cotton *may* be used for hosiery, roads, houses, and ice-cream, and to remember that it *is* being used, and can continue to be used, for tires, towels, table-cloths, napkins, shirts, men's underwear, filter cloth, and a thousand other purposes.

But, the paper, glass, rayon, and similar goblins will get you if you don't watch out!

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"Windblown"—The First Rayon Rug

IN THE New York office of Firth Carpet Co. was recently shown the adjoining display of Firth's rayon-wool pile carpeting, "Windblown." The texture is a new one to the carpet field. The pile is unusually long and lies in swirls which give interesting tones of light and dark to the color of the rug itself. The line comes in a brilliant range of the lighter shades. It is primarily a floor covering for the bedroom or dressing room. Though synthetics are playing a growing part in the carpet field, this is the first number generally offered which features rayon.

•

FRONT COVER—This month knitted styles come to the fore. Left to right the items on the front cover are: "Fairskin," rayon brassiere and panties by Globe Knitting Works; wool bathing suit by Florence Gainor; two-thread, 51 gauge hosiery by Oakbrook Hosiery Mills; knitted wool dress and cape from Apolda Knitting Mills. Other new styles on pages 66 to 67.

Wool Manufacturers Celebrate

Boston meeting marks 75th year—Rayon in forefront of discussions—500 Banquet

A SEVENTY-FIFTH BIRTHDAY party has both its gay and serious sides. And so it was with the National Association of Wool Manufacturers in its Diamond Jubilee at Boston, April 4. Rayon, wage-hour determination, wool labeling, market practices, reciprocal trade agreements, were all given a serious survey, while an air of genial hospitality gave the gathering at the Copley-Plaza Hotel full evidence of a real celebration.

Nearly 200 sat down at luncheon following the morning's business session, and 500 attended the banquet which climaxed the day.

Arthur Besse, president of the association, brought a realistic message to the wool textile industry in his luncheon address, in which he urged costing on a single-shift basis and abandonment of taking unspecified orders at the start of a season. He expressed belief that a turn has been reached, and, after contraction of operations to the low level of early 1938, he called it inevitable that there should soon be demand for goods which will be reflected in a firming wool market.

"A high percentage of the industry," he said, "is too absorbed in the struggle to obtain an impossible share of a limited market to be able to realize how truly limited the market is. For the full year of 1939 the percentage of idle looms averaged 37%; in 1938 the figure was 48%. One of the unpleasant facts which should be faced is that if all the looms in the industry operated full time on one single shift of 40 hours, their output would equal substantially the greatest amount which the industry has been called upon to furnish during any one of the last five years.

"As a practical matter, there seems to be but one solution for the immediate future, namely, planning the offerings of the industry with a more realistic understanding of the amount which can be sold. This means that costing on the basis of single-shift operation must become the rule rather than the exception. This does not involve an actual limitation of operations to one shift. It does mean that those mills which are able to obtain enough business to operate their equipment more than one shift and consequently show a performance above the average, will and should be properly rewarded for the superior styling, salesmanship or manufacturing ability which made the showing possible."

At the close of the business session in the morning, Arthur Besse was re-elected president and Walter Humphreys secretary-treasurer for the coming year. The vice-presidents follow: Franklin W. Hobbs, Arlington Mills; Frank D. Levering, Eavenson & Levering; Allen R. Mitchell, Jr., Allen R. Mitchell & Son; Abbot Stevens, M. T. Stevens & Sons Co.; Arthur O. Wellman, Nichols & Co.

At the Jubilee Banquet, Thursday evening, Arthur Besse was toastmaster, and the speakers included Lewis O. Barrows, Governor of Maine; Boake Carter, news commentator and Dr. John L. Davis.

THE RAYON SYMPOSIUM brought together on the same platform Dr. H. DeWitt Smith of A. M. Tenney Associates, Alexis Sommaripa of E. I. du Pont de Nemours & Co., and Prof. E. R. Schwarz of M.I.T. The first spoke on rayon as a fiber, the second on fabrics made therefrom and the third on the new non-cellulose fibers. Edwin Wilkinson, assistant to President Besse, presided at the session.

Dr. Smith said that he came not as a wolf in sheep's clothing, but somewhat as a sheep in rayon clothing as he was wearing what he called the oldest all-staple men's suit in the country which he had been wearing, off and on, since February, 1937.

"Rayon staples," he said, "are not a threat to the wool manufacturing industry. They are a new medium of expression and by opening new fields are increasing the per capita consumption of fabrics."

He pointed out that wool was good for its particular uses not because it is a protein, but because of its structure. Related fibers need not be chemically similar. Dr. Smith compared fiber diameter of rayon staple with the U. S. Top Standards; 1½ denier is well above the fineness of 80s wool, 3 denier between 70s and 80s, 5 near 60s, 8 near 48s, 12 near 36s. In fineness distribution in any sample, staple may be too uniform, he said. To produce "hand," one may blend deniers. Length of staple may be from ¾ inch up, with a high degree of uniformity and the carpet industry is now working for effects with blends of lengths.

Dr. Smith analyzed the physical characteristics of the major fibers, pointing out that wool was known for its resilience and elasticity and cotton for its strength. The viscose types tend to resemble cotton and the acetate types wool. He urged manufacturers not to think of fibers in terms of an old technology but in terms of principles utilizing their characteristics.

"We now have a conscious control over the destiny of textiles," he said, "but the rayon manufacturer needs your cooperation and guidance. The unique structure of wool yarn should remove you from competition with cotton mills on such a product; and on the worsted system can be spun longer and coarser fibers than by cotton spinning. Preparatory processes are likely to be simplified when using staple."

Alexis Sommaripa focused his remarks on experiences in the dress fabric field, explaining that this was the field for big volume and high stakes, and that fabrics developed here were taken later into men's wear and even upholstery. The criterion of the dress field is esthetic values.

"What has made spun rayon desirable?" he asked and added that the answer was home spun fabrics. "We are so surrounded by mechanical regularity in the materials that we are constantly using and with cold, flat surfaces, that in fabrics we turn to something spongey and warm, that we can look into."

He pointed out that cotton mills which have been most successful with spun rayon dress goods were those that took over the wool technique. His investigation of the field has shown that wool is at present the most desirable dress fabric since the higher income groups buy relatively many more wool dresses, but the total is still small when compared with the volume field in the lower brackets. He pointed

to the lesson that there is a large pent-up demand for wool dresses.

Staple benefits, he pointed out, by meeting women's desire for interesting yarns both in summer dresses with textural interest and in fall editions of the summer cotton dress.

Worsted people have an advantage over cotton, he said, in the mental capacity of their man power in utilizing blends, in finishing fabrics and in merchandising. Stressing opportunity for new fabrics he pointed to the rise in men's play clothes. Women prefer men in tweeds. Coarse shirtings of the hopsacking type have taken the country by storm.

In closing he touched on a number of ways of gaining new effects: make a hard-twist yarn feel soft by using finest deniers; twist worsted with a rayon crepe yarn; gain higher machine speeds with rayon in twisting, weaving and finishing.

Prof. E. R. Schwarz threw considerable light on the newer fibers by proposing division into two classification groups: 1. "Artificial" fibers, made by rearranging molecules, as in the cellulose derivatives; and, 2. "Synthetic" fibers, made by arranged atoms of carbon, hydrogen, oxygen and nitrogen, such as Nylon.

"The chemist," said Prof. Schwarz, "now constructs molecules for the purpose to which they are to be put. We let the sheep grow our wool for us, but he doesn't know what it is for, nor how to grow it. The rayon manufacturer takes what a plant has grown and rearranges it. Now instead, if you start from scratch, you have realized synthesis. Chemically these synthetics —Nylon, Vinyon, soy bean, casein, glass—are the same, carbon, nitrogen, oxygen and hydrogen; but architecturally they are different." And he pointed out that one might build a cathedral or a worsted mill from the same pile of bricks and mortar.

In answer to a question from the floor, H. W. Rose of American Viscose Corp., spoke briefly on the "strong" rayon fibers as having been made so by both chemical and mechanical means, and as permitting use of finer sizes and longer staple lengths.

At the business session, President Besse touched on labeling legislation. After sketching its recent history, he said,

"For something over two years, virgin wool proposals have been before the Congress and the Federal Trade Commission. At the present time a bill has passed the Senate (S-162) and another bill has been referred to the House Rules Committee (HR-944). Being opposed to the idea of trying to differentiate between different types of wool fibers in a fabric, we have fought these proposals. The wool growers, by their action in withdrawing their support from the labeling bills which we were jointly advocating, have delayed the passage of a sensible fabric identification measure to the point where the use of substitute fibers has been encouraged to the detriment of the wool-textile industry and of the growers themselves.

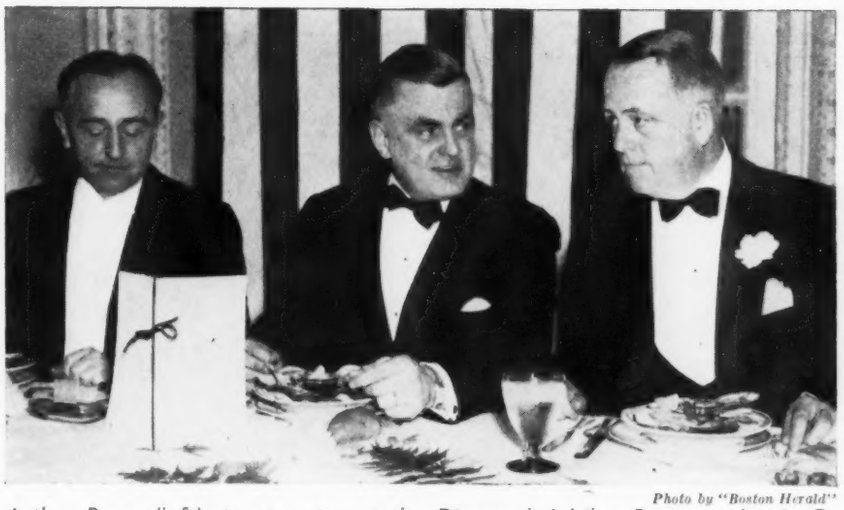


Photo by "Boston Herald"

Arthur Besse (left), toastmaster at the Diamond Jubilee Banquet; Lewis O. Barrows, Governor of Maine; Moses Pendleton, president of American Woolen Co., snapped at the head table on the evening of April 4.

"I am not belittling the use of rayon or other fibers, but I believe such fibers should stand on their own and not be passed off under a wool label. I believe that we should show an interest in constructing mixtures which are not duplicates of and competitive with the blends made in cotton plants, but which are new, different, original and only possible of production on wool or worsted equipment."

Arthur Besse also reviewed the association's stand on the definition of the wool-textile industry as set by the Wage-Hour Division. He said,

"*After* recommended minimums of 32½¢ and 36¢ had been agreed upon by the Textile Committee and the Wool Textile Committee respectively, the Administrator proposed to include in the lower cotton rate the manufacture in cotton plants of yarn containing up to 45% of wool and of piece goods and blankets containing up to 25% of wool. There seems to be a reluctance to make appropriate changes because of the possibility of upsetting the present textile minimum of 32½¢. It is our contention that the only methods by which the Administrator can adjust this matter in fairness are (1) either include within the wool-textile industry all mills or departments producing mixtures which contain any substantial percentage of wool, or (2) not accept the report of the Wool-Textile Industry Committee on the ground that this recommendation was based on the assumption that the industry was to be differently defined by the Administrator. Your directors have voted unanimously to take the matter to the courts in the event that the Administrator is not disposed to provide for proper amendment of the definitions."

Thurmond Chatham pointed out that cotton mills were in effect getting a subsidy to manufacture wool goods by being permitted to spin 45% wool yarns under the lower cotton industry minimum hourly rate.

The association has vigorously opposed the reciprocal trade agreements. Col. Millard D. Brown of Continental Mills reported on the present situation.

"The renewal resolution passed the House," he said. "In the Senate an amendment to make the trade treaties subject to ratification by a two-thirds vote was lost by a vote of 44 to 41. An amendment requiring a *majority vote* of both Houses before a treaty is concluded has yet to be voted upon. Senator Walsh has stated publicly that he will vote for such an amendment. If all who voted to require a two-thirds approval vote also for this amendment, it will require only one vote in addition to Senator Walsh's to carry the amendment making Congressional approval of future treaties necessary. But even assuming that all amendments are defeated, everything is not lost. The matter is apt to become somewhat of a campaign issue and it is more than likely that the complexion of Congress may so change before any further substantial use can be made of this treaty-making power that it may be possible to cause Congress to reverse itself."

Joanna Textile Mills Co. began in 1902 as a 5,000-spindle yarn mill; now has 89,928 spindles

Joanna Grows Up

Good planning results in orderly expansion from 5,000 to 90,000 spindle plant

THE STORY of Joanna Textile Mills Co., Goldville, S. C., is one of continuous expansion and constant modernization. Established in 1902 as a 5,000-spindle yarn mill, the plant expanded gradually until 1924. In that year the mill began to step out in earnest, and since then has grown from 14,224 spindles and 352 looms to 89,928 spindles and 2,378 looms. Joanna has grown up, but has not grown old. Plant, equipment, and layout have been kept up to date at all times. Progress has been so orderly that the mill inside and out gives the impression of being a brand new plant, constructed as an integral unit. It was planned from the beginning to avoid haphazard expansion, which makes a hodgepodge of so many mills. Consequently, Lockwood Greene Engineers, Inc., was retained to make an exhaustive study of processes and possibilities in the scheme of development, and the recommendations of this organization have been important factors in the well-regulated expansion of the company, especially when building additions were necessary. Another factor which has played a vital part in keeping the plant at peak efficiency is the mill's own organization to carry out research, control, and maintenance.

No real "before and after" picture of Joanna can be shown, because first-class operating conditions have been existent almost as long as has the mill. But a trip through the mill and village leaves no doubt as to the value of a program of this sort, despite the difficulty of evaluating its results in dollars and cents.

In the mill, work in process flows smoothly in a straight line through the various departments. Rooms are light and clean, with no congestion around machines. Located throughout the plant are Bahnson humidifiers for maintaining proper atmospheric conditions. Few ends are down or looms stopped. The workers are well-dressed and seem to enjoy their work. Modern machinery, large packages, and high speeds are stressed in every department. However, it is emphasized that high speeds are not employed at the expense of the quality and uniformity which are vital in the manufacture of high-grade shade cloths.

The feeling of successful operation is further borne out by a walk through the neat village, with its individualistic houses, paved streets and sidewalks, trees and flowers. The 400 houses are well-painted; garden spots and fenced-in pasture land are provided; shrubbery can be had by those who want it. Recreational facilities, such as club houses and swimming pool, are available. The final and most important indication that the program has been successful is the fact that Joanna is one of the few textile mills which has

Nearly 90,000 long-draft spindles are in operation at Joanna

a profit-sharing plan for its employees.

Returning to the mill, one finds modern equipment in all departments. The opening room has ten No. 7 Saco-Lowell feeders, insuring a thorough blending of raw stock. In the picker room, nine single-process Saco-Lowell pickers are used. They include the latest-type blending reserves, producing more uniform and cleaner laps. Whitin Machine Works recently installed five Knowlton & Newton return-air condensers in a complete system for the pickers, eliminating the necessity for a dust room and putting the waste in a merchandisable form.

In the card room, all cards were recently reclothed under supervision of Saco-Lowell service men, using Ashworth Bros. clothing. This overhauling included the drawing frames, which were brought up to Saco-Lowell's standard for controlled-draft drawing. Two-process drawing is used. This room is provided with group drives using short-center drives from motors to line-shafts. Located here are two Terrell Machine Co. bobbin strippers with truck-hoisting mechanism. Whitin, two-process, long-draft roving completes the card-room equipment.

The spinning room contains Whitin and Saco-Lowell frames equipped with Saco-Lowell long-draft attachments. Parks-Cramer overhead cleaners are in use. Two Hygrolit conditioners set the filling yarn.

In the No. 1 spinning room, the frames are driven from G.E. three-bearing motors with four pulleys on shaft extension following the group-drive principle. Frames in No. 2 spinning room are provided with individual drives. The five Barber-Colman automatic spoolers and warpers located in the spooling and warping department have been equipped with a complete vacuum-cleaning system made and installed by Textile Shop, Spartanburg, S. C. The slashing process, formerly carried on in two widely separated slasher rooms, was consolidated in 1937 when a new slasher room was built directly over the picker room at the center of the plant. All slashers were then moved to this central location.

IN THE WEAVE ROOM, 930 of the looms are latest type, X-Model, Drapers. The remaining looms are Draper E Models. Looms range in width from 40 to 90 in. to meet the demands of the shade-cloth trade. Looms in No. 1 mill and part of No. 2 are equipped with individual drives, Westinghouse and General Electric motors being used. In No. 2 mill, looms on the first floor have group drive from basement. Morse Chain short-center drives are employed from motors to shafting. Veeder-Root pick counters, Denman pickers, Steel Heddle harness, all figure in the weave-room equipment. Loom beams are 24 in. in diameter.

In the cloth room, four Curtis & Marble latest-type rolling-up machines were added in 1937; and more recently a line of Parks & Woolson shears was installed. All goods are shipped in the gray, the owners taking about 80% of the output, while the remainder goes on the open market through H. S. Parker Co., the company's New York selling agent.

An important department is the research and control laboratory, one function of which is to test the material at various stages of manufacture and report both to the management and to the department heads. A well-equipped machine shop handles repair work and machine maintenance throughout the plant.

Construction work has been carried out largely by Fiske-Carter Construction Co., Greenville and Spartanburg, S. C.; electrical work, by Huntington & Guerry, Greenville.

As stated above, the real period of growth started in 1924. In that year

There are 400 individually designed houses in this village, one of the most attractive in the South

High-speed spoolers and warpers and large loom beams add efficiency

Stewart Hartshorn & Co. took over the company and reorganized it as Joanna Cotton Mills. Western Shade Cloth Co. came into the picture in 1928 as part owner and acquired full ownership in 1936. The latest change in the affairs of the mill took place in November, 1939, when the several manufacturing units of Western Shade Cloth were merged under one name, Joanna Textile Mills Co. Present officers include W. H. Regnery, president; W. F. Regnery, vice-president; William A. Moorhead, agent. Mr. Moorhead has been with the plant at Goldville since 1907, and is the oldest employee in point of service.

Present appearance of the house at Highlandville, in which William Carter started his knitting plant 75 years ago

Carter Co's. 75 Years

Noted underwear company observes an important milestone in its career

THREE-QUARTERS OF A CENTURY ago a young Englishman named William Carter set up a single hand-frame in the kitchen of his home at Highlandville, Mass., and with his young wife began the manufacture of cardigan jackets. This was the start of an enterprise which now employs 850, and lists its assets in early 1940 at $3,646,846.

Mr. Carter was born in Alfreton, England, in 1830. During his early years he learned the knitting trade from his father and grandfather. He landed in New York in 1855 with about $2.50 in his pocket. He moved to what is now Needham Heights, Mass., in 1858, where many others from his home region in England had preceded him and were already pursuing the knitting trade. He was first employed by John and Mark Lee at hosiery manufacture. A few years later he married Martha Lee and set up his own business on cardigans. The work was profitable, and the Carters saved enough money to buy additional equipment, hiring men to operate the added machines. When the home proved too small for the growing business, a 4-room shop was built.

John and Mark Lee were also doing a good business and Mr. Carter joined them under the firm name of Lee, Carter & Co., the Lees making hosiery and Carter continuing with cardigan jackets. During the panic of 1873, when it was nearly impossible to sell a dollar's worth of goods anywhere in the country, the firm failed and its property was sold to I. T. Burr of Burr Bros., large wholesalers, who had been purchasing most of the output. Carter was asked by Burr to take the mill in hand. The hosiery machines were sold and Mr. Burr was paid in full. Mr. Carter thenceforth ran his business as the William Carter Co., although at the start he was the only principal. The business continued to grow and in addition to cardigan jackets, novelties were made, including worsted mittens, men's and women's two-piece undergarments, and finally men's and women's union suits. This was one of the first plants in the country to make the latter goods.

In 1898 it was decided to sell direct. Previously only few textile mills had organized their own selling forces. The step marked the beginning of an era of great progress for the Carter business. In 1901 a Maine corporation was organized with William Carter as president, and his sons, William H. and Horace A., in active roles. About 1909, the Springfield (Mass.) Knitting Co. was absorbed, and in 1912 the present Massachusetts corporation was formed. William Carter died in 1918, and his son, William H., became president, Horace A. being vice-president, secretary and treasurer. Another son, Roscoe Carter, was assistant treasurer until his death in 1927, when Lyndall Carter, a son of Horace A., succeeded Roscoe. The present board of directors includes William H. Carter, Horace A. Carter, and William H. Best, the latter for many years the company's attorney.

Today the company's expanded line includes five major groups: (1) infants' and children's underwear, including the special Jiffon Nevabind shirts, sleepers, gowns, jackets and knit specialties; (2) women's knit underwear, gowns, pajamas and sportswear; (3) women's silk and rayon underwear, negligees, gowns, jackets, and slips; (4) men's and boys' shirts, shorts, longs, union suits and knit specialties; (5) women's and misses' foundation garments, including many styles of all-in-ones, step-in girdles and pantie girdles. The company's plants are at Needham Heights, Springfield, Mass., and Barnesville, Ga. (acquired in 1923). There are branch offices in Boston, New York, Philadelphia, Chicago, Dallas and San Francisco. National advertising is effectively utilized. In connection with the 75th anniversary, a style show and dance at Needham town hall was attended by 1,700, and was a most colorful event.

WILLIAM H. CARTER
president of the Wm. Carter Co.

HORACE A. CARTER
vice-president and treasurer

Arlington's Diamond Jubilee

TYPICALLY AMERICAN in its policies and development, vigorous in enterprise and substantial in growth, the Arlington Mills at Lawrence, Mass., observed three-quarters of a century of operation last February amid congratulations of its industry. Born on Feb. 20, 1865, near the close of the Civil War, this outstanding New England undertaking has served its customers through some of the most difficult decades of modern times, surviving financial panics and depressions, the shock of war in Europe, and arduous economic conditions too numerous to specify. Arlington's growth is dramatized by its magnitude today. These mills comb 75,000,000 lb. of wool yearly for themselves or on commission for others. On a weekly basis they comb 550,000 lb. of top (equivalent to fleeces of 40,000 sheep per day) spin 200,000 lb. of yarn; weave 150,000 yd. of worsted and woolen cloth. They have an average weekly payroll of $120,000, and average 5,600 employees.

Arlington Mills, after 75 years

The plant occupies 22 large brick buildings with 54 acres of floor space in Lawrence and Methuen. It has 131,744 spinning spindles and 1,250 looms on women's dress goods and coatings, staple and fancy men's wear, and specialties. The company's 30,000-kw. power plant includes the first topping boiler and turbine unit (a 3,000-kw., 650-lb. machine) to be installed in the textile industry (TEXTILE WORLD, December, 1938, page 69). A reservoir of 1,000,000,000 gals. capacity in southern New Hampshire, built by the company about 17 years ago, insures adequate water supply. Total assets on Nov. 30, 1939, were $14,501,258 and sales for the fiscal year ended then were $13,762,753.

In 1865 the corporation of the Arlington Woolen Mills was formed by Robert M. Bailey, Charles A. Lambard, Joseph Nickerson and George C. Bosson. Mr. Bailey became the first president and Sumner Wheeler the first treasurer. Within a year after organization the original frame building was burned; but it was promptly rebuilt. The tariff act of 1867 gave an impetus to the worsted trade, and it was decided to turn the Arlington product into those channels. Some 13 flyer frames, a comb, and some preparers were installed. James W. Bailey was agent, Lorenzo Dow, chief weaver, and a young man named Walker, who had learned his trade in England, furnished general technical knowledge. The mills daily consumed about 500 lb. of Canadian wool. A water wheel of perhaps 60 hp. under full head of the Spicket River sufficed to drive the machinery. The original Arlington fabrics included plaids, cotton warp and worsted weft, the warps being imported from England.

In 1867 William Whitman entered the employ of Robert Bailey's organization and soon after, on the departure of Mr. Walker from the company, became its "practical man," designing the fabrics and having some selling responsibility. Later as treasurer and president of the mill and finally as head of the great selling organization bearing his name, William Whitman was identified with Arlington for 61 years until his death in 1928. With Mr. Nickerson (president 1871–80) and Mr. Whitman working in close cooperation, the mills weathered the financial and economic storms of those early days, solving the problems of management, and establishing the organization on a sound financial basis. To remove limitations suggested by the original title, the company name was changed in 1875 to "Arlington Mills." In a quarter-century after its inception, the organization had become one of the largest establishments of its kind in the United States.

In 1891, Franklin W. Hobbs, the present president of Arlington Mills, joined the company. He spent that year abroad studying wages and cost of living in worsted manufacturing centers. In 1892 statistics obtained and analyzed by him, including data on conditions in this country, were submitted to the Senate in connection with the industry's opposition to tariff reduction. In 1895 Mr. Hobbs became assistant treasurer, treasurer in 1902 and president in 1913.

Other officials beside Mr. Hobbs are Marland C. Hobbs, vice-president, who joined the company in 1919; Albert H. Chamberlain, treasurer; Harry A. Wright, clerk; and J. Sime Mercer, agent of the mills at Lawrence.

Executive offices are at 78 Chauncey Street, Boston. In its support of efficient merchandising, employee education, laboratory research, safety engineering, emergency hospitalization, first aid and hygiene, it has a front-line reputation among New England industries.

Arlington Woolen Mills in 1865

Sandpaper to Textiles

Electrostatic process for abrasive papers now used in fabric manufacture

FROM SANDPAPER TO TEXTILES seems to be a far cry. But, after three years of experimentation, an electrostatic process originally developed for manufacture of sandpaper has now been adapted to printing of dress goods and production of upholstery fabrics, with other textile applications in the offing. The start of the development was back in 1926, when sandpaper made by the electrocoating process invented by Elmer C. Schacht was first produced experimentally at the Watervliet, N. Y., plant of Behr-Manning Corp., a division of Norton Co. Since 1932, when large-scale exploitation of the process began, Behr-Manning and its licensees have made many millions of dollars worth of coated abrasives by methods involving the electrostatic deposition of finely divided materials.

Some three years ago, research was begun on the adaptation of the electrocoating process to the fabrication and decoration of textiles. Arnold Print Works, North Adams, Mass., solicited the cooperation of Behr-Manning on the latter problem, and the combined efforts of the research and development staffs of the two companies culminated in January of this year with the introduction of a new type of applique fabric (Fig. 1), which is being offered exclusively by Arnold Print under the trade name Fibredown. A feature of the fabric is that it can be laundered or dry cleaned without damage to the pattern.

Photos by Bigelman

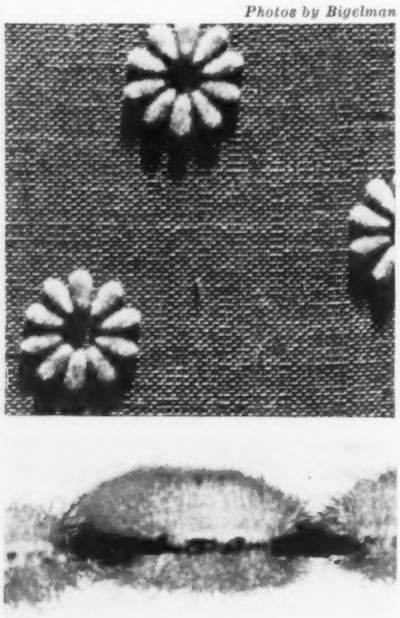


Fig. 1. Fibredown fabric introduced by Arnold Print Works; photomicrograph of cross-section shows cut fibers forming design on both face and back

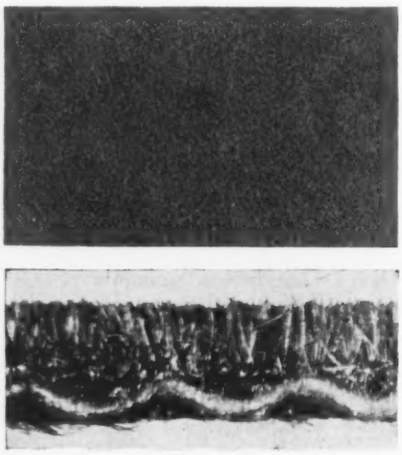


Fig. 2. Norzon fabric developed by Behr-Manning Corp.; photomicrograph of cross-section shows cut fibers standing erect

At the Behr-Manning plant efforts to date have been concentrated largely on production of automobile upholstery fabrics. Samples of these materials, known as Norzon fabrics (Fig. 2) have been offered to the automotive industry and are now being tested by the largest manufacturers. Norzon fabrics appear to be suitable also for raincoats, sportsjackets, shoes, belts, pocketbooks, etc. The fabrics are waterproof; the pile is resistant to wet and dry abrasion.

In the electrocoating process as used for textiles, cut fibers of cotton, rayon, wool, etc., are applied electrostatically to a suitable backing, either in patterns or as all-over effects. One major difference between this and other methods of applying flock or cut fibers is that the applique or pile fibers stand up straight with their long axes perpendicular to the backing.

The method employed in the electrostatic process is illustrated diagrammatically in Fig. 3. The backing fabric, *F*, coated on the face with latex or another suitable adhesive, passes between the negative electrode, *A*, and the positive electrode, *B*. The cut fibers, *G*, are carried on the conveyor belt, *E*. Entering the electrostatic field between the two electrodes, the cut fibers first rise and stand on end with their long axes parallel to the lines of electrical force *C–D*, and then are propelled at high speed toward the positive electrode. Voltages range from 40,000 to 60,000. Intercepted by the fabric, the cut fibers imbed themselves endwise in the adhesive. Because of the fact that the fibers are mutually repellent while in the electrostatic field, they become separated and uniformly spaced before they reach the backing cloth. The final step in the procedure is to subject the fabric to high temperatures in order to harden and set the adhesive so that it will bind the fibers permanently.

As many as 300,000 individual pile fibers, each 0.02 to 0.06 in. long, can be applied to 1 sq. in. of backing fabric. Incidentally, the apparatus can be so arranged that the cut fibers are propelled downward onto the backing fabric, rather than upward, as described.

The method employed at Arnold Print Works for production of Fibredown fabrics differs in several details from that used in manufacture of Norzon fabrics. Before the base fabric is passed through the electrostatic field, the adhesive, which is a combination of synthetic resins, is applied by means of a continuous stencil process to those areas which are to carry the design. As a result, only those cut fibers which imbed themselves in the adhesive are permanently attached to the cloth. Again, the electrostatic apparatus is designed to permit application of the cut fibers to both the face and the back in one run.

The amount of research involved in the adaptation of the process to textiles is indicated by the fact that fifteen members of the Behr-Manning research staff are currently working on problems pertaining to the electrocoating of textiles. One important phase on which work is now being carried out is the development of carpets and other floor coverings, with pile fibers ¼ in. or more in length.

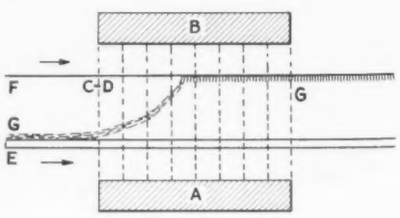
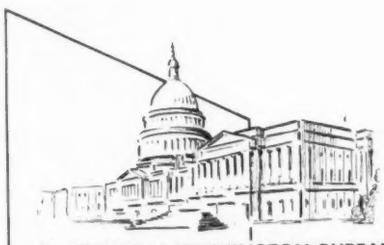


Fig. 3. Schematic diagram of apparatus employed in electrocoating

Certificate Plan Almost Dead

Senate deals coup de grace by passing the parity item—Other Washington news



McGRAW-HILL WASHINGTON BUREAU

PAUL WOOTON, Chief Correspondent
Blaine Stubblefield
Irvin D. Foos Carter Field
Robert Colborn M. G. Maury

YOU CAN NOW PLACE odds of three to one, or ten to one if you're an optimist, against enactment of a processing tax this session. Approval by the Senate of a $212,000,000 farm parity item in the 1941 Agriculture appropriation seems to write finis on Secretary Wallace's certificate tax proposal to cover cotton and other major crops.

At this writing the bill still had to run the House-Senate conference gamut. But tacit approval by President Roosevelt on the huge parity fund, which would be paid directly from Treasury, is expected to make that test easy. Another point that indicates approval by the committee is that the House, which passed the farm bill minus the parity fund, actually relied on the Senate to put the item in. Thus the Representative group got full credit for economical intentions, while the farmer still will get refreshing showers of Washington checks and will promptly forget who done him wrong.

If it actually comes, defeat of processing taxes will be glad tidings for cotton manufacturers, but the cost is high, in the observers' opinion. The $212,000,000 was not budgeted. Appropriaton of that amount pushes farther away any possibility of balancing the budget, and it draws nearer the day when the public debt limit will be raised.

To some observers, including isolationists and pacifists, one bright blue hole shows in the clouds. The $212,000,000 may be chopped off the national defense handout for the year.

MINIMUM WAGES of 33½¢ per hour recommended by the Knitted Underwear and Commercial Knitting Committee, and 35¢ recommended by the Knitted Outerwear Committee, will become effective May 6 and July 1 respectively. Wage-Hour Administrator Col. Philip Fleming announced his decision March 18, as he prepared to issue formal orders.

On April 23 Col. Fleming will hear oral argument in review of the order regarding employment of learners in knitting industry. Wool industry hearing on Apr. 1 developed chiefly argument over definition of the industry.

The Division commended four companies for adopting annual wage plans under the law, which practically releases them from the hours provisions. Three of the companies are in textiles. Col. Fleming dissolved three industrial committees; textiles, hosiery, and millinery, which have completed their work.

Use of kickback devices to avoid payment of full minimum wages particularly in the cases of learners and piece work, was deplored and declared illegal by Wage-Hour General Counsel George A. McNulty.

Some Congressmen are complaining that Col. Fleming is slow in acting to remedy defects in the law by interpretation. They threaten to call up the Norton amendments for consideration.

AFTER MORE THAN A YEAR of stalling on amendment of the Labor Relations Act, the Administration is at last forced to an attitude of compromise. Key Democrats passed the word to President Roosevelt that, for their political health if for no other reason, the House Labor Committee had better consider the proposed changes. Oppositon to the NLRB and its works has spread beyond Tory bounds and is burning up New Deal support, especially in the South.

When the Labor Committee went to work, it had at hand the drastic revisions proposed by the special House Committee set up last year to investigate NLRB. It had also a thousand and one other suggestions by everybody and his dog. But instead of reading this heap, the Committee first read the law, and re-approved it in principle.

In the end it reported out a bill of four amendments to the Act: (1) provides for recognition of craft unions as bargaining units; (2) gives employers the right to petition for an election when caught in a jurisdictional dispute; (3) prohibits NLRB from changing the bargaining unit for one year after the unit has been accepted and has concluded a contract; (4) would increase the membership of the present Board to five instead of three.

As this went to press, Congressional labor leaders were predicting the House Labor Committee would fail in its attempt to get a House vote under suspension of the rules and that any or all of the anti-NLRB Smith Committee suggestions would be thrown into debate.

These three put a blight on Secretary Wallace's certificate plan for processing taxes. Treasury Secretary Henry Morgenthau Jr., (left) said the proposal was "regressive," and Webster says that means going backwards. John W. Hanes (center) former Undersecretary of the Treasury, is said to have laid the back-stage groundwork for defeat of the measure. Federal Reserve Board Chairman Marriner S. Eccles (right) thinks the farmer constitutes a good basic outlet for beneficial spending, but he's still against it

Georgia Operating Executives

Discuss carding and spinning problems at Atlanta meeting

CARDING AND SPINNING PROBLEMS were thrashed out before 350 mill men at the spring meeting of the Textile Operating Executives of Georgia, held, March 23, at Georgia School of Technology, Atlanta. J. C. Platt, agent, Chicopee Mfg. Corp. of Ga., Gainesville, chairman of the group, presided over the meeting. The carding session was led by J. Hal Daughdrill, general superintendent, Callaway Mills, LaGrange, Ga. Julian M. Longley, superintendent, American Thread Co., Dalton, took charge of the spinning discussion. A feature of the program was presentation by Harry Purvis, superintendent, Chicopee Mfg. Corp. of Ga., of a paper on measuring variation in yarn by means of standard statistical test methods.

Tests involving breaking strength, weight, and other factors used in control of textile manufacturing are not always a true measure of quality, according to Mr. Purvis. Sometimes the fact that one test varies more than another is more significant than a comparison of averages. For example, the results of two tests of 50 samples each might show that the average count is close to 30s and the average break is close to 60 lb. for each sample. Casual inspection of the averages would lead to the assumption that the yarns are very similar. Yet, a closer examination of the data might show that in one sample the numbers stayed within four counts, while they varied within seven counts on the other sample.

The fact that one test varies much more than the other may be of more significance than the fact that the counts and breaks are the same. The measures of variability are: (1) the range, which is the interval between the largest and smallest, (2) the average deviation, which is the average of all differences from the mean, and (3) the standard deviation, which should be used when the highest degree of reliability is sought; to obtain standard deviation, it is necessary to square the differences of each measure from the mean, add these and take an average, and then take the square root of this result.

The coefficient of variation is usually found by multiplying the standard deviation by 100 and dividing by average deviation. This figure is useful for comparing the variability not only of yarns of the same count, but also yarns of various counts, as well as for comparing the variability of the yarn counts with the variability of its own breaking strength.

These data can be plotted daily or weekly on a control chart to give a running record of variability of yarn or roving counts, breaking strength, weights of slivers and laps, ends down, loom stops, etc. Any special test can be compared to the control chart and should provide a very accurate control of manufacturing quality.

THE CARDING SESSION was opened by Mr. Daughdrill, who asked whether or not it is necessary to add blending equipment in the opening room when long-draft roving or spinning is added. Opinion was almost unanimous that additional blending is necessary in the opening room to take the place of lost doublings from other processes.

Most of the operating executives favored installation of air-circulating systems on pickers to eliminate dust and maintain constant temperature and humidity. C. K. Cobb, general superintendent, Canton (Ga.) Cotton Mills, asserted that he has not had a single fire in his picker room since installation of revolving screen clearer-type machines over a year ago. Another member described a home-made air-circulator at Chicopee Mfg. Corp. of Ga. which has given excellent results. (This device was described in the November, 1938, issue of TEXTILE WORLD.)

Use of a card-flat grinding machine was generally advocated, because it enables new flats to be tested and properly matched upon installation.

Colored neps in stock can be reduced to a minimum, it was pointed out, by reducing the speed of the card and setting it as close as possible. It is also helpful to keep the wires sharp.

There was a difference of opinion as to the best method of controlling drawing sliver. About half the group control weight at drawing frames; the other half, at the cards. Some members advocated changing all gears at the same time on drawing frames, while an equal number favored changing gears whenever required by variation in numbers.

There also was a wide divergence of opinion in regard to the amount of cotton which can be run normally between re-buffs on speeder rolls. The average run through speeder rolls without re-buffing was said to be from 1,600 to 1,900 lb. of cotton on average counts. However, W. H. Gibson, general superintendent, Martha Mills, Thomaston, said that he runs 4,000 lb. in four months through the front line and 26,957 lb. per spindle through the back line in two years without re-buffing, operating 128 hr. per week.

THE SPINNING DISCUSSION was opened by Mr. Longley, who asked for a comparison of the different types of overhead cleaners. Here again, the group was about equally divided between advocates of overhead cleaners and creel-type cleaners. Several of the members said that an overhead cleaner should clean the frame down to and including the ring rail, but others objected that a blast this strong would blow lint from the floor into the work.

Consensus was that spinning frames should be overhauled and aligned after 4,000 to 6,000 hr. of operation, depending on the type work.

There was some objection to filling bobbins with outside brass shields on the grounds that the shield cuts the filling. However, it was pointed out that in weaving coarse yarn where the bobbin is emptied every two or three minutes, the brass shield is advantageous in that it reduces wear on the bobbin. The members unanimously favored brass tips on bobbins.

The majority of operating executives favored bark-tanned aprons of 0.035-in. thickness in long-draft spinning.

It was agreed that most spinners prefer ball-bearing suspended-type bobbin holders, instead of skewers, because they are more efficient and reduce breakage. One member reported that these holders paid for themselves in eight months, on 13s and in eighteen months on 36s.

W. R. Beldon, managing director, Clark Thread Co. of Ga., Austell, was elected to the executive committee to succeed R. P. Sweeney, whose term has expired.

Committee D-13 Meets in Charlotte

Greater interest in testing in South reflected by its successful sessions

The latest trek south of Committee D-13 of the American Society for Testing Materials proved to be as successful as its previous ventures into that section. The occasion was the spring meeting of the Committee, held this year at Charlotte, N. C., March 13-14. Well-attended sessions indicated the consistently growing interest in testing and test methods among textile technicians in the South.

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THERE WERE TWO paper sessions at the Charlotte meeting. Subjects treated included textile finishing, raw cotton, color standards, spun-rayon fabrics, and a report of the work done on textile standards.

The first paper at the Wednesday session was "The Use of Synthetic Organic Chemicals in Textile Finishing" by D. E. Truax, of Stein Hall & Co., Inc. Mr. Truax said that the introduction of spun-rayon material has given a new life to crush-resistant finishes. A mixture of synthetic resin and starch imparts a relatively permanent finish to cotton fabrics, gives resistance to bacterial and mildew growth, and improves dielectric properties. With suitable handling and the right type of resin application, 52-in. goods will give the same result as 54-in. goods from the standpoint of shrinkage. Fraying and pulling out at the seams can be largely overcome by the use of 1 to 2% of the correct resin. Synthetic resin compounds are useful in softening and waterproofing textile fabrics.

Observations and preliminary conclusions concerning the influence of variety, locality of growth and season on the fiber and spinning properties of cotton, with special reference to two selected varieties for the crop years of 1936 and 1937, were presented by Dr. R. W. Webb, of the U. S. Department of Agriculture. The speaker described how 16 varieties of cotton at 14 different locations in the cotton belt compare in recent years from the standpoint of yarn strength, evenness, appearance, waste, etc. Spinning results for the two years showed that "on the average the 1937 samples were inferior to those of 1936 by 4.1% as regards cord strength, and 8% as concerns yarn strength." Not all samples were inferior, but the average for 1937 was definitely poorer than for 1936, with the most inferior yarn being made from Louisiana cotton. Reason for this reduced yarn strength was largely fiber deterioration probably caused by micro-organisms.

"Standardization of Color Names, the ISCC-NBS Method," by Dorothy Nickerson, of the U. S. Department of Agriculture, was the first paper at the Thursday session. Tracing development of the science of colorimetry during recent years, Miss Nickerson described work of the Inter-Society Color Council and National Bureau of Standards in developing a system of color names that would be based on a foundation firm enough to satisfy the color scientists and yet general enough to be acceptable by the public. The method finally adopted is simple in principle. The terms light, medium and dark designate increasing degrees of darkness; the adverb "very" is added to extend the lightness scale to "very light" and "very dark." The adjectives, weak, medium, strong and vivid designate degrees of chroma.

The system is not expected to replace color names used in the field of merchandising nor standards such as those of the Textile Color Card Association. However, it can be used for purposes of grouping similar colors.

Results of consumer reaction surveys to spun-rayon fabrics show only a 32% concern with appearance and drape, while the remaining 68% is spread over other quality factors, according to Alexis Sommaripa, of the Rayon Division of E. I. duPont de Nemours & Co. These surveys indicated that touch to the skin, coolness or warmth, and weight accounted for 25% of desirable attributes, while the other 44% dealt with normal serviceability factors. A fabric should not feel stiff, limp, slippery, scratchy, sticky, gritty, or coarse, it was said. It should be smooth to the skin and comfortable in weight and coolness; it should drape in graceful folds and not cling to the figure, ride up, or bulge.

In addition to the paper sessions there were sub-committee meetings on a great many different subjects including cotton yarns and threads; glass fiber; atmospheric conditions; bleaching; dyeing and finishing; tire fabrics, household and garment fabrics; woolen and worsted yarns; test methods; etc.

At the business session all officers were re-elected as follows: H. J. Ball, Lowell Textile School, chairman; F. S. Mapes, General Electric Co., vice-chairman; R. H. Brown, Parks Cramer Co., vice-chairman; W. H. Whitcomb, R. I. School of Design, secretary.

Committee on Arrangements included F. S. Mapes, chairman, General Electric Co.; D. E. Truax, Stein, Hall & Co.; W. B. Hodge, Parks-Cramer Co.

Officers and honor guests at Committee D-13's Charlotte banquet, left to right: A. C. Clifford, D. E. Truax, R. H. Brown, C. L. Warwick, Mayor Ben Douglas, of Charlotte, R. W. Webb, H. J. Ball, F. S. Mapes, W. H. Whitcomb

Cotton-Yarn Diameters

Ashenhurst vindicated by microscopic and cross-section area measurements

By E. H. HELLIWELL

OF PERENNIAL INTEREST is the subject of cotton-yarn diameters. The question of how cotton-yarn diameters can best be determined for use in making cloth-construction calculations has always been a controversial one. The observations and conclusions presented in this article are the results of an investigation started a few years ago by a small group of men who were taking a summer course in textile testing at Massachusetts Institute of Technology. The laboratory work was carried out by K. Biswas, who has since returned to India. The writer tabulated and interpreted the data.

The chief conclusions reached follow:

1. Micrometer measurements of cotton-yarn diameters are inaccurate.

2. Cross-section area measurements and microscopical measurements are much more nearly accurate.

3. The Ashenhurst formula

$$\frac{1}{(0.92\sqrt{N}\times 840}$$

gives results which are comparable with both cross-section area measurements and microscopical measurements. Many formulas for estimating yarn diameter omit the correction factor 0.92; inclusion of this factor increases the precision of the result.

4. Indicated diameters of many plied yarns bear little relation to the diameters of the singles yarns before plying.

5. The twist inserted in yarn affects its indicated diameter.

6. Moisture regain affects yarn diameter, but to a less degree than it affects yarn number and in a different manner. A yarn which is bone dry will have a larger diameter than the same yarn at 7% regain, but a filling yarn conditioned almost to saturation will have a larger diameter than the same yarn at 7% regain.

Knowledge of cotton-yarn diameters is essential in making cloth construction calculations.

THE DIAMETERS of various sizes of singles cotton yarns ranging from 12s to 90s, as determined by different methods, are given in the accompanying table. The differences between the results obtained by micrometer measurements and those obtained by the other methods are undoubtedly due largely to the flattening effect produced by the pressure exerted by the contact micrometer. Any pressure, however slight, applied to a yarn for purpose of measurement causes the yarn to assume an elliptical shape. The measurement is made on the minor axis of the ellipse, and no consideration is given to the increased length of the major axis. The flattening effect is proportionately greater on fine counts. Hard-twisted yarns are more resistant to the pinching effect of the micrometer jaws.

Another reason for the inaccuracy of micrometer measurements is that no cotton yarn is perfectly circular in cross-section. This means that there is a difference in indicated diameters measured with a micrometer across different points in the same cross-section. On the other hand, equivalent diameters derived from precise area measurements are affected but slightly by the shape of the cross-section.

The slight differences between the results obtained by cross-section area measurements and microscopical measurements may be due to differences in twist or to variations between the actual yarn count and the nominal count.

In cross-section area measurements, the cross-sections of the yarn to be measured are lightly pressed into a circular form the area of which can be controlled and indicated to 0.00001 sq. in. The equivalent diameter is computed by the formula $D = 1.1284\sqrt{A}$, in which D = diameter, and A = area of the circle.

In area measurements, any displacement in cross-section will not materially change the total area. The shape of the cross-section may be circular, elliptical, triangular, polygonal, or irregular. If the area is correctly measured, the correct equivalent diameter can be derived from the area measurement.

A check against possible error in cross-section area measurements is to take 20, 50, or 100 strands of yarn for measurement at one time and divide the area found by the number of strands taken. This will not show variation in yarn diameters, but it will give a very good average diameter of a large number of strands.

Cotton-yarn diameters in fractional inches as determined by four methods

Yarn Number	*Cross-Section Area Measurements*	*Microscopic Measurements*	*Ashenhurst Formula*	*Micrometer Measurements*
12/1	1/93	1/101	1/92	1/165
18/1	1/113	1/120	1/113	....
20/1	1/118	1/124	1/119	1/212
23/1	1/124	1/126	1/128	....
25/1	1/140	1/127	1/133	....
29/1	1/144	1/141	1/143	....
32/1	1/159	1/162	1/151	....
36/1	1/173	1/173	1/160	1/333
40/1	1/177	1/182	1/168	1/400
50/1	1/197	1/186	1/189	1/508
80/1	1/251	1/245	1/238	1/680
90/1	1/277	1/252	1/251	....

Center-Stitched Double Cloths

Eliminate danger of contrasting colors showing through at stitching points

By R. A. C. SCOTT

IN DOUBLE CLOTHS which are center-stitched, unlike ordinary double-cloth constructions, the two fabrics do not interweave. Instead, they are bound together by means of extra warp ends or picks which pass alternately from one fabric to the other, and lie between the two when not employed for stitching. The method is widely employed when strongly contrasting colors and/or considerably different sizes of yarn are used on face and back, as, for example, in plaidback overcoatings.

An outstanding advantage of this method of construction is that, when properly done, it eliminates the danger of colors showing through at stitching points. However, to achieve satisfactory results good judgment must be exercised in selection of yarns, colors, ends and picks, and in finishing.

Extra-warp stitching is generally preferred over extra-filling stitching because it is less costly, and because of undesirable variations in picks per inch which may result from extra-filling stitching. The extra-filling method, however, is sometimes used in raised or napped fabrics, and the extra picks may serve as wadding as well as stitching yarn.

Figs. 1 and 2 illustrate two center-warp-stitched double cloths. In the first of these the warp is arranged 1 face, 1 back, for eight ends, then 1 center or stitching end. In the second, the arrangement is 1 face, 1 back, 1 center, 1 face, 1 back. The filling is arranged 1 face, 1 back in both weaves. Face and back weaves of both illustrations are $\frac{2}{2}$ twill. Although the first arrangement is in general use, the resulting fabric is loosely stitched and the stitching points are always on the same line. The second method not only gives a more firmly joined fabric but also permits better distribution of stitching points.

The method of handling the center warp consists of raising its ends over every back pick, and lowering them under every face pick, except at the points where stitching is desired. To stitch the fabrics it is necessary to raise the center warp ends over certain face picks and sink them under certain back picks. The rule for determining stitching points so the center warp will be concealed is: Raise the stitching end over a face pick when the adjacent face ends are likewise raised on that pick; and lower the stitching end under a back pick when the adjacent back ends are likewise lowered on that pick. Always alternate raising and lowering of stitching ends and, where possible, avoid having a face and a back stitch come on adjacent picks, as this causes increased strain on the stitching end.

Numerous variations of face and back weaves, as well as stitching weave, are possible. For example, a $\frac{2}{2}$ right-hand twill may be used for the face and a $\frac{2}{2}$ left-hand twill for the back. This results in a fabric that is truly reversible, since twill lines run in the same direction no matter which side of the fabric is viewed.

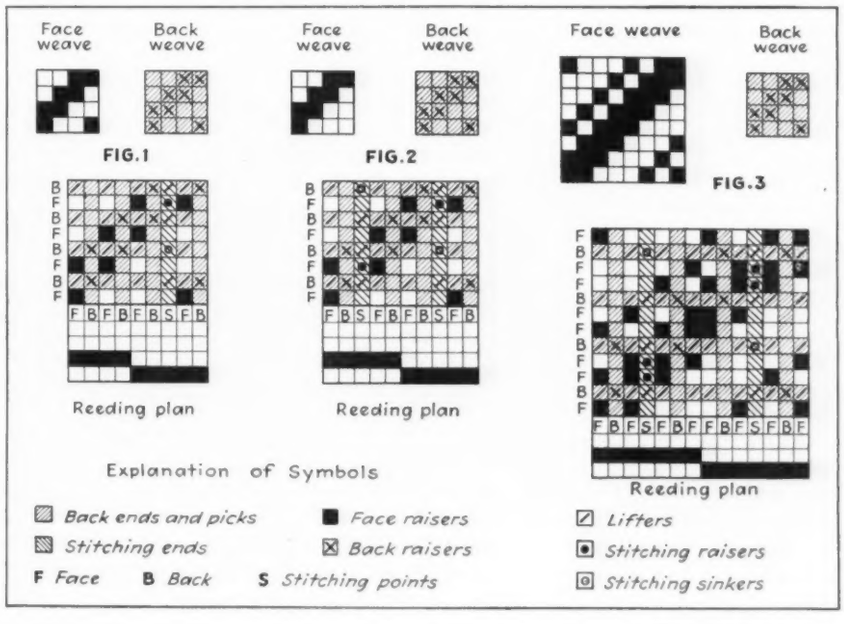
The proportion of face ends to back ends can likewise be varied. Fig. 3 illustrates this, with a proportion of two-to-one in both warp and filling. The warp is arranged 1 face, 1 back, 1 face, 1 stitching, 1 face, 1 back, 1 face.

The face weave is a $\frac{3}{1}\ \frac{1}{3}$ twill, and the back weave a $\frac{2}{2}$ twill. Since the arrangement of face and back warp repeats on six ends, and the combined face and back weaves on double that number, there will be two center-warp ends to each complete repeat of the weave, instead of only one, or a total of fourteen ends per repeat.

In stitching with this weave, the center warp is raised over two face picks and lowered under one back pick. Although satisfactory results could be achieved if the stitching ends were raised over only one face pick, it is considered preferable to stitch the fabrics in the manner shown. This coincides with the proportion of face yarns to back yarns; moreover, since the two-to-one arrangement would naturally indicate finer yarns in the face than on the back, double face stitching would more equally balance the strength with which face and back fabrics are held together.

The two-face-to-one-back arrangement allows the use, if desired, of quite coarse yarns on the back fabric, and at the same time decreases the danger of brightly colored back yarns showing through to the face.

In reeding warps of this type, it should always be arranged that the stitching ends come in the middle of a dent, as indicated in the illustrations below.



Cross-Dyeing Checks

Precautions in handling viscose-acetate fabrics to avoid staining acetate fiber

By PHILIP LeBRUN

CROSS-DYED viscose-acetate checks and plaids for dress goods continue to be popular. They are required on a smooth, semi-crisp handle, with a sharp contrast in shade between the two fibers. To drape well, they should not be too stiff.

Most fabrics of this type are handled on reel machines. A few of the heavier sharkskin weaves are best scoured and dyed on the jig. Usually the warp yarn is sized with gelatin or another readily soluble size which is easily removed by a simple warm-water treatment.

A few finishers scour these fabrics on a continuous scouring or boil-off unit. Most finishers, however, scour them in a reel machine. The usual procedure is to enter the goods in a reel machine containing soft, warm water. After a few turns in the warm water, soap, fatty alcohol sulphates, or another detergent is added, and scouring continued for 20 to 30 min. at 120 to 140° F.

Most checks and plaids are so dyed that the acetate is left a pure white, while the viscose is dyed in some dark shade. Black, navy, wine, red, royal blue, and dark green are the most popular colors in the order named. A slight staining will cause a rejection of the goods by the customer. Therefore, care must be taken to avoid an alkalinity of over pH 9.6 in the scouring bath. An alkalinity of 9.6 pH will not cause saponification of the acetate as long as the temperature is kept below 180° F. Some finishers have used scouring baths which are higher than pH 9.6 without causing saponification, but the practice is dangerous.

In some instances the viscose and acetate are dyed in contrasting shades. In this case higher alkalinities may be used in the scour, as the acetate dye will cover up any slight staining of the acetate from the direct color used for the viscose. Cross-dyeing of the acetate and viscose in contrasting shades can be carried out in one bath, or the acetate can be dyed first and the viscose then dyed in a second bath. For sharply contrasting shades, the latter method is advisable. If the viscose is stained from the acetate dyes, it may be necessary to clear it by a cold potassium permanganate treatment followed by a warm, acidified sodium bisulphite bath. The viscose is then dyed with selected colors which do not stain acetate rayon.

When several shades are ordered—some with the acetate left white, and others true cross-dyes—the true cross-dyes are left for the last. In this way, any fabrics which may be slightly stained can be salvaged by redyeing into one of the true cross-dyed effects.

If a fatty alcohol sulphate is used for scouring, the dissolved dyes can be added directly to the dyebath without an intervening rinse. If soap is used, rinsing before dyeing is usually necessary, as the soap tends to hydrolize more and more at the higher dyeing temperatures, and thus increase the alkalinity above a safe point.

Dyeing ordinarily is carried out on temperatures between 160 and 180° F.

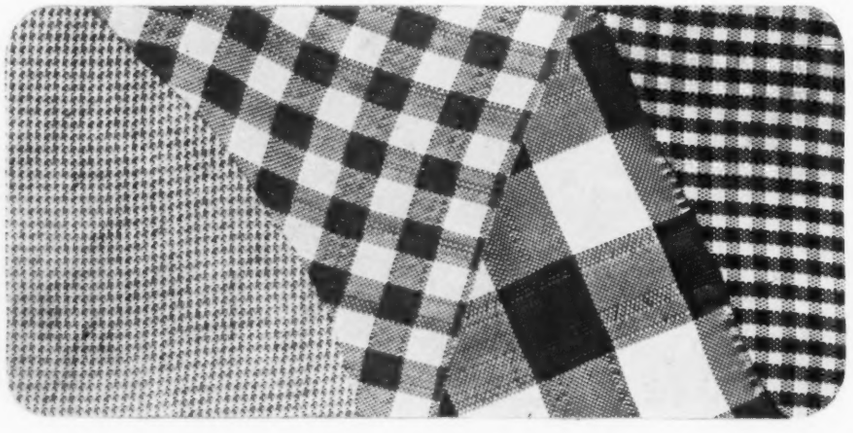
During dyeing, the acetate is likely to acquire a slight stain which is mechanical in nature. To remove this stain, the dyeing process is followed by two rinses with warm water to which common salt has been added to prevent bleeding of the color from the viscose onto the acetate. A final cold rinse with salt water completes the operation.

Cross-dyes must not be left wet for any length of time after dyeing, as this results in blotches caused by the substantive dyes bleeding into the adjoining acetate fibers. An inexpensive method of treating such fabrics which makes the process almost foolproof is to add ½% zinc sulphate crystals to the final rinse in place of the common salt.

In a few rare cases the acetate is dyed, leaving the rayon white. As practically every acetate dye stains rayon to a slight extent, a clearing-up process is needed. Treatment in a dilute solution of potassium permanganate followed by a second treatment with sodium bisulphite generally is satisfactory. When this is insufficient, a lukewarm sodium hydrosulphite or cold sodium hypochlorite treatment will serve the purpose. Sharkskins which have been jig dyed are more difficult to clean than are fabrics dyed in reel machines. This is due to the more concentrated liquor used in dyeing and to the difficulty of rinsing thoroughly after dyeing. However, treatment along the lines outlined above should result in clean whites.

AFTER DYEING, jig-dyed materials are transferred to a combination finishing range, consisting of a mangle or a vacuum extractor, a frame, and a Palmer unit. A light calendering completes the finishing operation. Dress fabrics dyed on a reel machine are usually centrifuged, opened up, and dried on a loop dryer. They are then transferred to a combination finishing unit similar to that mentioned above. The size pan on the mangle contains a softener, such as 2 qt. of 75% sulphonated oil to 50 gal. of water. If desired, one of the newer substantive softeners can be used. Occasionally the cloth is transferred directly from the reel machine to the finishing unit. In this event, an opening or scutching device is placed directly before the mangle so that the cloth enters the nip free of wrinkles.

In some instances a softer, mellower handle is desired. In such cases the material is given a final decatizing treatment. This removes most of the surface glaze imparted to the cloth by the Palmer drum and at the same time makes the goods softer and velvety.



Proper scouring is essential in processing viscose-acetate fabrics

Efficient Layout for Soaking

Features carefully arranged work flow and properly selected equipment

By O. P. SHELTON

THREE FACTORS which have always to be considered in any silk or rayon soaking department are physical layout, materials and technique, and personnel planning. This article concerns the first two of these factors, which are closely interrelated. It can be applied either to starting a new department or modernizing an existing one. It is believed that most readers will find one or more of the suggestions given to be profitably applicable to their own soaking departments.

Obtaining proper flow of work, in conjunction with handling the quantities needed, should be the first consideration. Brain work at this stage will save back work and extra expense later on. The flow should be from warehouse to preparing (or opening) tables, through soaking and extracting, on to dryer racks, and out to winding department or yarn storage space.

The first snag usually is that the warehouse is located at some distance. If this is the case, reserve an area in the soaking department for a small stock, say one day's run. This space should be convenient to the tables at which the yarn is to be taken out of the receiving packages for transfer to soaking machines or net bags.

Preparing should be carried out in a place adjacent to and on the same level as the soaking equipment. When silk or rayon is to be tub soaked, the yarn can merely be pushed off the tables into the waiting solution. For tub soaking of rayon, it is also quite efficient and surprisingly satisfactory merely to open the 10-lb. bundles and, without further ado, dump each bundle into a soaking bag.

After the required soaking time has elapsed, the solution, in the case of silk, is allowed to drain away. When rayon yarns are being soaked, it is necessary to recover the liquor for reuse; hence the yarn must be removed from the bath and allowed to drip. A loose platform bottom in each tub, which can be hooked to an inexpensive hoist to raise the whole batch simultaneously for draining, is a simple and inexpensive way of accomplishing this. One plant (and maybe others) tried to substitute baskets for the loose platforms so that basket, yarn, and all could be swung into the waiting centrifugal extractor. But the idea did not work well, because loads were always out of balance and could not be properly extracted. Careful loading of the centrifugal by hand seems to be most satisfactory in the long run.

When rayon is to be machine soaked, the yarn should be put on the porcelain or stainless arms of the machine from the 10-lb. bundles. After soaking, skeins should be allowed to drip a short, but uniform length of time. Then they can be transferred to a lined extractor or, better still, to bags which are so hung as to permit recovery of additional drippings. In the latter case, the bags should be rushed to the extractor before the saturated yarn becomes cold. If extraction is carried on when some of the soaked rayon is hot and some cold, uneven creping will result, due to variations in the soaking ingredients left on the yarn.

IT SHOULD BE POINTED OUT that in silk soaking the bath is almost exhausted and virtually all soaking ingredients remain in the silk, regardless of extraction. In rayon soaking, on the other hand, the bath is by no means exhausted, and the extracted liquor still contains the soaking elements. Hence it is important that all rayon extracting be carried on uniformly, so that soaking materials on the yarn remain the same from batch to batch.

From the extractor the yarn should pass immediately to the tables at the dryer or drying room. Here a chute or conveyor will save time and money. Bags are opened by hand, and the yarn is immediately put on dryer poles or racks. Sometimes various mechanical gadgets are used to shake out the skeins, but in the writer's opinion manual work and careful inspection to make sure skeins dry right side out are essential for good-running work. Trucks or skids should be waiting to carry the dried yarn to a storage area, for conditioning, after which it is ready for use.

Labor cost in a department such as the foregoing, when paying prevailing wages, should not exceed ½c. per lb.

As to equipment, soaking tubs or machines should be of non-corrosive, smooth metal, steam jacketed (no coils in the solution), with heat controls, and pumps if a circulating bath is used. In the case of rayon, reserve solution tanks should also be jacketed, equipped with controls, and have provision for piping directly to the soaking bath. No live steam should enter any bath or be used in mixing materials.

The centrifugal should have a timer, preferably one that applies a brake at the termination of the extraction time. This is essential in rayon soaking. In addition, the centrifugal, if used for rayon soaking, should have provision for recovery of solution. A small pump is useful for returning reclaimed liquor to the bath. Extractor basket, casing, and outlet should be easy to clean and non-corrosive.

If a drying room is used, it should have temperature controls, as well as exhaust facilities. Drying machines should have accurate, quick-acting controls; and means for ascertaining or, better, controlling, moisture content of the air, as a check upon the drying.

Soaking apparatus, including extractor, should stand on a waterproof base, which slopes to a drain. Wooden platforms or slats should be avoided: they become slippery, and it is difficult if not impossible to keep them as clean as a flat floor. A raised portion around the base edges will show its value the first time the drain cannot handle the quantity of liquor run into it. All pipes should be large enough so that filling or draining can be rushed, and so that the lines do not soon become clogged with soaking materials.

For yarn that is to be transferred to the winding department, there are relatively inexpensive canvas baskets on the market, equipped either with runners or rubber casters. Some models have self-stacking features. It is often desirable to transport silk skeins on the dryer poles, using trucks made for the purpose.

Nothing in the foregoing is new or unique. But check the items mentioned against your soaking layout, or against the next one you see. How many of the features could be incorporated to advantage?

Motor Failures

Minimized by proper maintenance say speakers at S.T.A. meeting in Gastonia

CARE AND UPKEEP of motors and other electrical equipment in textile mills were discussed by two authorities at the spring meeting of the Gaston County Division, Southern Textile Association, held March 15, in Gastonia, N. C., H. Gilmer Winget, superintendent, Victory and Myrtle Mills of Textiles, Inc., presided, as chairman of the division. Speakers were Charles K. Bryant, president, Bryant Electric Repair Co., Gastonia; and H. J. Seibert, superintendent, of Atlanta (Ga.) Service Shops of General Electric Co.

Mr. Bryant stated in part: It is important to maintain proper connections on electrical equipment. All connections should either be solderless or carefully soldered. Wiring should be checked to make certain it is heavy enough to carry the load imposed without heating. All motors should be checked to be sure they are not loaded to the point where heating occurs.

Bearings are the most frequent cause of motor troubles in textile mills. Practically all this trouble is the result of improper oiling. Another reason for motor failures is improper handling of motors when moving them from one part of the mill to another. Rough treatment of old motors tends to break down the insulation and may result in the failure of the insulation. When a motor begins to heat up, it is a sure sign that there is something wrong, and the motor should be inspected to determine the cause of the heating. All motor controls should have overload protection to protect against sudden surges of power that might result in the burning out of the motor. An overload device should be set to about 5% above maximum load for the motor. The common practice of jogging a motor on and off to prevent belts from slipping off of pulleys is a good way to shorten the life of control contacts. Proper loading of a motor to obtain the maximum efficiency of operation is from 75 to 100% of full load, with 90 to 95% the nearest to ideal.

Causes of burned-out coils include a shorted turn or turns; overload, which causes insulation to break down from heat with subsequent shorting out of coil; improper winding; corrosive substances, such as oil or acid, getting on the insulation and causing shorts by destroying the effectiveness of the insulation. Glass-fiber insulation is definitely superior to cotton in installations where the motor is subjected to the action of corrosive acids, etc., as in a dyehouse.

In air-conditioned plants it is important that the motors should not run hot, since this would increase the cost of cooling the plant, probably more than the cost of eliminating the hot motors would amount to. It is important that all motors be adequately grounded, and that connections to the ground should be carefully made. Where the motors are grounded to the water system, the piping should be thoroughly cleaned of paint before making the connection.

MR. SEIBERT stated in part: In many cases a mill may be losing money because the motors that are installed in the plant are not pulling the proper load. Often some motors are heavily overloaded, while others are ridiculously underloaded. In this case, it may be possible to effect considerable savings by replacing the motors so that each one is operating at near its full rated capacity.

At least every six months the bearings on all motors in a plant should be inspected with gages to determine bearing wear. If any bearing shows excessive wear, it should be replaced before the motor has had a chance to burn out. Likewise, a check-up should be made to find the cause of the wear. Belts too tight, shaft crooked or binding, couplings loose, oil holes stopped up, vibration, etc., may cause bearing trouble. Frequent inspection will enable the mechanic to discover such difficulties before the motor actually fails. If an oil leak is discovered, the leak should be stopped immediately.

Controls should be checked about once a month. It is most important to keep them clean. It is not a bad idea deliberately to single-phase a motor from time to time to determine whether or not the protective equipment is operating properly to protect it. Lock nuts and bushings at the point where they enter control boxes should be tight.

Defective bearings cause 40% of motor failures. While lack of oil is the most prevalent reason for worn bearings, it is also possible to over-oil a bearing to such an extent that the oil gets onto the windings and causes the varnish to break down. Too heavy an oil will cause a bearing to generate heat, and the lubricating value of such oil is lowered. Where ball bearings are used, it is often found that the bearings fail because of total lack of oiling or greasing. On the other hand, excessive greasing or oiling may be just as bad. If the bearing is over-packed, it will generate heat and cause failure of the balls, followed by burn-out of the motor. It is a good idea when greasing ball bearings, to leave the bottom plug out, force grease in until all discolored grease is forced out, let the motor run until no more dripping occurs, then close the plug.

Improper fit is another reason for failure of ball bearings. If a bearing is forced onto a shaft too tightly, it is likely to fail long before its normal life. The outer race of a ball bearing should be loose enough to revolve one or two turns in the course of a year.

Failure of humidifier motors to start up properly after the humidifiers are cleaned may be the result of loose connections, causing single-phase; rotor bars loose; or, more probably, the bottom bearing being bad from lack of oiling.

There is some question as to the advisability of using ball or sleeve bearings on motors, and the facilities of the individual plant must be considered. Sleeve bearings are easier to install, and are less expensive, if properly cared for. In many cases, ball bearings are definitely superior if properly installed, and may result in a saving to the mill. Ball bearings are easier to get started into operation after standing over the week-end. Where waste-packed bearings are used, it is important that they should not be over-oiled; three times a year should be sufficient under ordinary operating conditions. An oil of from 100 to 200 Saybolt viscosity at 100° F. should be employed on motors, using the lightest oil that will give sufficient protection to the bearings.

In plants having a large number of motors, a cleaning program to get over the entire plant every two years is valuable. Motors should be taken down, inspected thoroughly, and any deficiencies corrected; then they should be revarnished with a good varnish and thoroughly baked. Windings should be cleaned with carbon-tetrachloride, shafting and bearings checked, rotors checked, etc.

KNITTING EXHIBITION SECTION

1940 knitting week

THE KNITTING INDUSTRY converges on Philadelphia April 15 with mixed feelings. It has behind it the year 1939, with record output; sharp increase in manufacturing facilities, particularly in the South; and continued progress in style diversification and consumer appeal. It has ahead of it a year with possibility for further advance, but with problems which should make Knitting Week a period of clinical observation, rather than one of self-congratulation.

No realistic member of the industry will deny the existence of these problems. The success of recent years is in itself the greatest problem. It has attracted more and more entrepreneurs—and has created a condition of temporary overcapacity. We say "temporary" advisedly. We do not believe the knitting industry has reached its zenith, and must look forward to a declining economy. On the contrary, we believe there is possibly more assurance of growth here than in any other division of textiles.

Nevertheless, there is an immediate situation to be faced. We don't have to tell hosiery manufacturers, for example, that existing and potential overcapacity threatens the present price and profit structure. Sharply declining mill schedules of recent months reflect an awareness of that fact.

Nor do we have to remind them that Nylon, Vinyon, and other synthetics presage at least a partial—and eventually maybe a complete —change-over in raw materials.

Nor do we have to emphasize unduly the continued competition from woven goods in underwear and outerwear.

All this calls for sage leadership—not only for 1940, but more particularly for the development of broad policies which will point toward consistent progress in knitting during the years to come.

To that end, the Knitting Arts Exhibition in the Philadelphia Commercial Museum April 15 to 18, the meetings of the National Association of Hosiery Manufacturers April 17 and of the Underwear Institute April 18, represent technical and economic forums where such broad policies may be developed.

Knitting Week in Philadelphia is fun. It means renewal of old friendships, convivial dinners, and the country-fair comradeship applied to business. But it also is serious stuff. It represents a chance to explore the future—and to shape it.

THE FOLLOWING PAGES ARE DEVOTED TO KNITTING FEATURES ➡

Consumer appeal marks

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1. "Aquabat" is a Jantzen bathing trunk made of Ripple-Sheen having two-way stretch. Retails at $2.95

2. Rambo & Regar makes these socks. Lower "Velvacord", 19c retailer with loop face suggesting corduroy; upper a fancy terry, 25c; line sold by Shreve & Adams

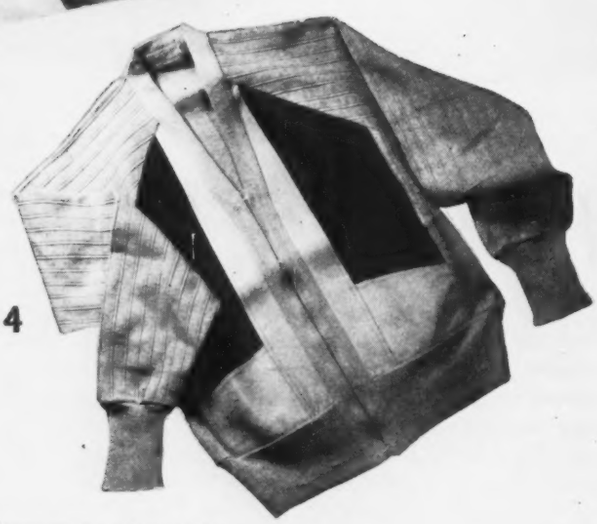
3. Nylon hosiery will soon be available to the consumer. The two-thread number is sheer. Photograph by courtesy of "Look"

4. Sweater coat evolution has resulted in a garment with a suede and calf leather front and knitted back and sleeves. From A. A. Smith & Sons; retails for $2.98

5. Munsingwear offers this combination for women's comfort and style

6. Men's athletic shirts and briefs as produced for 1940 by the Otis Division of E. Z. Mills. The display stand is also new

7. Chas. Chipman's Sons have produced an Argyle diagonal on a Banner wrap machine in a variety of colors; retails at 35c



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new knitted products

8. The heelless sock has turned fancy with a spiral rib. This is a special offering of Lord & Taylor, New York retailers. It sells for $1.50

9. Bathing suit with two-way stretch, knit with Darleen, a covered rubber yarn

10. A terry-faced pull-over in gay colors made by High-Rock Knitting Mills. This item retails at $1

11. A run-resist, rayon fabric designed by Julius Kayser & Co. It is used in panties and night gowns, called "Glories". The little yarn-dyed pattern suggests minute spring flowers. Panties retail at 75c

12. A new Gotham number—an all-cotton mesh which is the first of the Dept. of Agriculture's designs to be put on the market. It retails at $1.00

13. "Gala" one of Kayser's new American Scene Series of nightwear. Fabric is run-proof Kaytrique. It retails at $3.00

Items on front cover described on page 49

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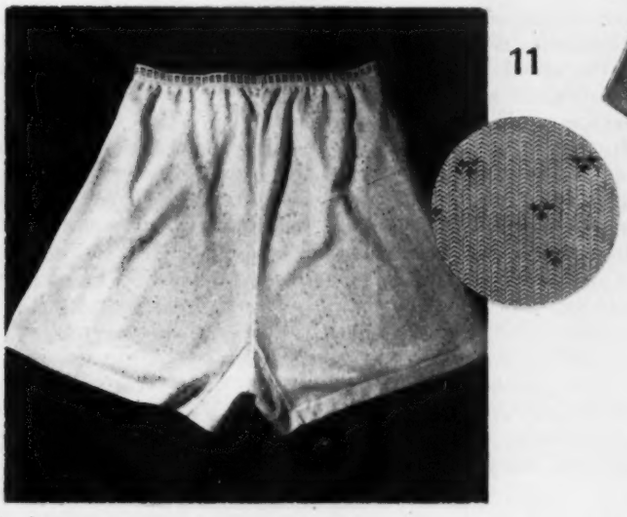

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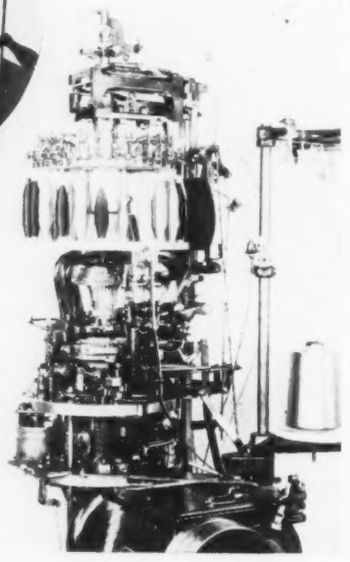
350 years of knitting

After slow start, rate of change has speeded up

THE GREEKS had no word for it. This is no reflection on the Greeks, for they, and other ancient peoples, were completely without knowledge of what has since come to be called knitting. Most historians seem to agree that knitting had its origin as a hand process for making caps and hosiery in England or in Scotland about the middle of the 15th Century. Thus it came about that the Anglo Saxons were the ones to supply the necessary name. It was derived from a previously existing word, "cnyttan" which conveyed the meaning of "thread woven together by hand."

By 1550 the art of knitting was widely practiced in England and elsewhere both in the home and by a few organized groups. History credits Henry VIII as the first monarch to wear knitted silk stockings. It remained for his daughter, Queen Elizabeth, to make the silk stocking an accepted part of the court's regal attire.

The Aiken machine made in 1854 and latest Scott & Williams HH-PW which produces any length complete hosiery in 24 colors



To judge from records of the late 1500s hand-knitting had become a well-nigh universal occupation. And this was not incongruous with those times, as everything else was done by hand with simple, primitive devices. Suddenly, into this bucolic scene, where nothing was mechanized, came the hand-operated knitting machine of the Reverend William Lee, which, in its parts and motions, established at one stroke the principles which appear unchanged in the most modern knitting machines.

William Lee was born in Calverton, Nottinghamshire, received an M.A. degree from Cambridge, had a church in Calverton which paid him £40 a year, and in addition was "heir to a pretty freehold." This man of the arts and the cloister in 1589 completed the world's first knitting frame. So far as we can tell at this distance, all the features that went into that knitting machine were the product of his imagination and mechanical skill. He devised the springbeard needle with groove into which the hook may be pressed when a new loop is pulled through the old. His frame was equipped with dividers for equalizing the amount of yarn in each loop, and with jack and sinker construction, unchanged in principle to this day. His coulier motion was actuated by pedals, and the relatively small up-and-down motion of these pedals was ingeniously converted into a much longer reciprocating motion by the use of a combined small and large pulley. It is said that he could do 600 loops a minute on this machine with its eight needles to the inch running on worsted fabrics, as against 100 loops for the best hand knitting rate. He later made a finer gage machine with 20 needles to the inch (30 gage, it would be called today), especially for knitting silk hosiery, which did 1200 loops a minute.

William Lee's achievement gives him high rank among the great creative geniuses of all time. But like many of his peers, his life was seemingly a series of failures. His first effort to patent his knitting frame was refused by Queen Elizabeth on the ground that, since the machine made worsted stocking material, granting a monopoly to Mr. Lee would throw out of work thousands of her subjects whose daily bread depended upon their skill at hand knitting. Lee was led to believe that if his machine produced silk stockings the Queen might look more favorably upon granting a patent. To produce the machine of finer gage took many years, and when he again approached Queen Elizabeth with his finer silk frame, he found her indifferent.

He tried to obtain assistance in France and removed to Rouen about 1605. Henry IV of France appeared an enthusiastic patron and was on the verge of granting Lee a patent when he was assassinated. This was a final blow to Lee's hopes and he did not survive the monarch by many months, dying in Paris in 1610 in poverty. His grave is unmarked and unknown.

Lee's group of helpers and associates carried on with gradually increasing success. In 1657 the London Frame Work Knitters Company was chartered by Cromwell. Gradually, also, the English rulers recognized the commercial importance of the knitting frame, and laws were enacted to prohibit export of these machines in order that the English workers in London and in Nottingham might have a monopoly. This prohibition was only partly successful in maintaining England's advantage, as knitting frames began to be produced and used at Chemnitz in Germany and Troyes in France during the 18th Century. As late as 1812 it is stated that there were 29,632 stocking frames in England, while on the Continent in that same year there were only 13,189.

FOR 150 YEARS after Lee's invention there was virtually no change in construction of the knitting frame. In 1745 the tuck presser was first introduced, permitting raised patterns or open work. The inventor of this attachment is not known. In 1758 Jedediah-Strutt of Derby made the first consequential change in Lee's frame by placing a second needle bar on the machine, mounted at an angle with the regular needle bar and allowing production of ribbed fabric, which, having greater elasticity than the flat, was a definite forward step in the development of knit goods.

Application of power to the knitting frame was patented by Sam Wise in 1769 when he devised suitable cam pieces and tappets which would operate the machine upon the rotation of a driving shaft. Around 1775 the principle of warp knitting was brought to the industry. This mechanism permitted the knitting of yarn running lengthwise of the fabric instead of crosswise as on Lee's frame.

The feverish activity which one gathers from history existed in European

knitting centers during the 17th and 18th centuries found practically no reflection in the American colonies. However, in two centers hand-knitting was practiced on a relatively large scale. Germantown, Pa., was the first and probably up to 1800 the largest. Ipswich, Mass., was the New England center. Good authorities believe that there was probably no knitting machine in this country prior to 1818, when the first machine destined for the U. S. was smuggled out of England in a cargo of salt. It was brought to Ipswich in 1822 by Benjamin Fewkes and George Warner. Additional machines were brought into the country, and in 1832 Peatfield Bros., of Ipswich, built two stocking frames for Benjamin Fewkes, which may perhaps be the first knitting machines made here. In 1831 a machine hosiery mill was started by John Button in Germantown.

These, of course, were all hand-operated frames, and to Timothy Bailey of Albany goes credit for the operation of the first power frame in 1831. Thus began the industry which later centered in Cohoes and made that town for a time the country's underwear center.

There is considerable conflict in information on the first circular knitting machine. DeCroix, a Frenchman, is said to have produced a circular machine in 1798. Peatfield Bros., of Ipswich, are said to have had a rotary warp frame in operation in 1834 and to have invented a "round knitting machine" in 1841. An almanac published in 1845 credits Erasmus French of Springfield with having devised a circular machine which would knit one sock per hour.

These nebulous developments in circular knitting preceded the invention of the latch needle. That improvement came in 1849 (invented by Matthew Townsend of Leicester) and paved the way for the first successful automatic circular machine. And such machines were America's contribution to the art. Claim for the first machine of this type is made on behalf of Herrick Aiken, who bought patent rights on the English latch needle, and in 1854 in Franklin, N. H., built a circular knitting machine equipped with a dial provided with radial slots in which the latch needles functioned by means of a cam device which was continuous in its operation. The machine produced knit tubing which was cut off in suitable lengths and the heel and toe knit by hand. Such a machine is owned by Sulloway Mills, Franklin, N. H.

Arasmus French of Waterbury, Conn., filed a patent on a circular knitting machine in November, 1855, and a short-lived company was set up to promote it. It was said that the machine was the first on which stockings were completed.

Despite the nominal success of these early machines nothing much came of the seamless hosiery industry in America until about 1870 when its period of expansion began. The first commercially successful automatic circular machine was completed in 1879. The first Scott & Williams machine followed shortly. A circular machine containing 240 needles and running at a speed of 300 r.p.m. knits up yarn at the average rate of one mile in six minutes and in doing so produces 72,000 perfect loops a minute. A circular ribbed underwear machine with 24 feeds may run up to 1,500,000 loops a minute.

Among the versatile machines produced in the United States may be noted the Lamb flat frame patented in 1863, in which two rows of needles were placed opposite to each other, near enough to connect the two rows of knitting when wanted, but far enough apart to allow the fabrics to pass down between them. By operating the two rows of needles in various ways, or by crossing and uniting so as to form stitches on both sides of the fabric, a multitude of shapes or fashioned materials may be made, from a tubular web to union suits, hosiery, mittens, etc.

Original Lee hand knitting frame, standard for 150 years, and latest Reading 26-section full-fashioned hosiery machine

Outside of the name of William Lee, perhaps the other best known name in knitting machine technology is that of William Cotton of Loughborough, England. He was granted patents in 1864 on a flat frame, full-fashioned, power machine which has been the prototype of all succeeding full-fashioning knitting machines. When examples of Cotton's machine were imported into Germany several machine builders of the Chemnitz area took up the manufacture of this type, and the first of these German-built machines to arrive in the United States was imported about 45 years ago. Among the earliest full-fashioned machines of American manufacture were those designed and built by Textile Machine Works, Reading, Pa., in 1898.

Over the greater part of its history the development of knitting has been largely associated with production of hosiery. From 1850, when the Bailey Company at Cohoes, N. Y., began to manufacture spring-needle underwear, until 1882, all the underwear manufactured was flat knit. Because of its limited elasticity, this fabric was not so well adapted for underwear as the ribbed fabric which came into the market through the development of the latch needle machine in 1882. In the early '90s the spring-needle rib made its appearance and gradually took over the bulk of the underwear market.

SINCE THE TURN OF THE CENTURY the history of the knitting industry in this country has been one of almost constant change—changes in types of raw materials consumed and products manufactured, changes in geographical location of mills, changes in technique.

Now in 1940, the industry still is in the midst of important changes—on the verge of others.

Less than 10% of the full-fashioned hosiery mills now in existence date back to pre-war days. In 1929 under 10% of the full-fashioned hosiery mills were located in the South; in 1939, nearly 30%. Full-fashioned hosiery has become finer and sheerer, most full-fashioned hosiery machines installed in the last few years producing 45-gage or finer. Machine speeds have been increased. Sections per machine have grown from 4 on the original Cotton machine to 18 or 20 in 1925, and to 26 the most favored at present. (Contrary to this trend is the single section machine introduced a few years ago.) Modern multi-section machines are capable of producing 16-doz. pairs of 3-thread, 45-gage legs in 8 hr.

Three generic types of single-unit or combination machines on which legs, feet, and heels are knit on one machine, have been introduced in the last decade. Welt turning and other operations have

been mechanized until the machines are almost completely automatic.

Quality and appearance have been improved by the three-carrier method of knitting and other developmnts. New finishes provide dull luster, protection against splashing, increased resistance to snagging. Mesh hosiery, the vogue for a few seasons, was followed by a run-resist stocking, but these enjoyed even a shorter period of popularity. A recent development is use of elastic yarns to offset strain from garters and flexing of the knees.

Seamless hosiery for years was a standardized line, consisting mainly of staple products. Then it suddenly went high-style. In a decade, production of full-length ribbed hosiery for children declined by almost 90%, the loss being compensated for by increased production of anklets and socks. Men's half-hose in somber plain shades gave way to brighter colors and gay designs; garterless socks or anklets with elastic yarn tops entered the picture and have steadily increased in popularity; golf hose came and went. Knee-length hosiery for women rose to about 50% of total women's seamless hosiery, but shortening of dress lengths in the last few seasons has seriously affected demand. Full-length silk and rayon seamless stockings have been improved in fit and style by improvements in equipment. Needles per machine had increased to 340 by 1931, whereas a few years before 260 had been the maximum. New machines and attachments which permitted a wide range of patterns were developed. Others were introduced to facilitate use of elastic yarns. Growing popularity of half-hose with the English rib led to manufacture in this country of links-and-links machines for producing that type of hose.

STYLE CHANGES IN UNDERWEAR are exemplified by the shift in recent years from the union suit type of garment for men to the present two-piece shirt-and-short or shirt-and-brief type popular today. Just as marked is the change from women's vests and bloomers to the present brassiere-and-pantie combination. In 25 years use of rayon in manufacture of knitted undergarments —mainly women's—has risen from around the zero point to 53,000,000 lb. in 1939. One factor which led to this growth was the invention by Rubenstein of a run-resistant circular knit fabric.

With the growth of the knitted-rayon underwear business came a new departure in the functional organization of the industry. Whereas cotton and wool underwear has always been fabricated from yarn to finished garment by one mill, the great majority of rayon underwear is cut and sewn by manufacturers who buy the knit tubing from knitting mills. As demand for cotton underwear decreased, underwear knitters diversified their lines, turning to production of such articles as pullovers, polo and basque shirts, beach and lounging pajamas, etc.

In common with the full-fashioned division, the underwear division has shown a tendency to migrate to the South, as attested by the fact that southern mills accounted for about 11% of underwear sales, based on dollar value, in 1929, and 17 to 18% in 1923–37.

A good example of the progress in equipment is a 16-feed ribbed underwear machine introduced about a year ago; this machine gives double production, as compared with an 8-feed machine, yet requires only 36% more power, 30% more capital investment, no more floor space.

A big change in the outerwear division had its inception when women started to swim rather than to "go bathing." Sales of knitted bathing suits began to soar. Subsequent changes in bathing-suit styles from year to year have been apparent to all. Similar changes have taken place in styles of jackets and sweaters for both men and women. Sales value of knitted dresses and women's suits rose from about $2,000,000 in 1925 to $22,000,000 in 1935; dropped to $10,000,000 in 1937.

Recent improvements in equipment for knitting outerwear fabrics have been largely in the direction of greater versatility and design capacity. An example is a 12-step-presser, individually operated spring-needle circular machine brought out about five or six years ago and equipped for comparatively instant (often 1 min. as against a day) change of pattern and for an increase in design capacity of 600% over the previous 2-step model.

Comparable with the changes in knitting methods and equipment have been those in sewing machines used in the knit goods industry, and equipment and processes employed in dyeing and finishing hosiery and knitted fabrics. Within the last month or six weeks, for instance, two new types of machines have been announced for pre-boarding Nylon hosiery.

NOW IN THE SPRING OF 1940 further fundamental changes can be foreseen —some clearly, some more dimly. First, there are Nylon, Vinyon, Avisco, and other new synthetic fibers, which not only threaten silk's last stronghold in the full-fashioned hosiery field, but also are certain to find use in manufacture of other types of knitted goods. Next, there is the promise of full automatic, single-unit full-fashioned hosiery machines which will have none of the disadvantages of what one authority calls the "transition" machines now available. At the same time, development of a circular machine which will produce a satisfactory full-fashioned type of hosiery does not seem too remote. Again, the problem of developing hosiery which is both runproof and pleasing in appearance is not beyond solution.

Increased interest in warp-knit fabrics and the introduction recently of an American-made, high-speed tricot machine are indications that the next few years may witness a rapid expansion of the warp knitting division.

Some time ago a writer prophesied in TEXTILE WORLD that knitted rayon will be the future clothing of the human race. Since then knitted topcoatings and overcoatings have been greatly improved and have increased in popularity. Knitted suitings for men have been produced which have some remarkably good characteristics.

In the first quarter of this century the knitting industry showed a vigorous growth. Value of products produced annually rose from about $100,000,000 in 1900 to a peak of over $800,000,000 in 1925. Then, despite the continued gain in full-fashioned hosiery production, and the vogue for knitted dresses which helped the outerwear division, total value of products, due in part to lower prices, had dropped below $700,000,000 in 1937, the last year for which figures are available.

Now there are signs that only a spark is needed to launch the knit goods industry into another era of expansion. Greatest opportunity for growth, as leaders in the industry see it, is in development of entirely new types of products. It was natural that, in searching for larger markets, knitters looked first to the apparel field. But in the last three or four years some of the more progressive companies have begun to make cautious inroads into the realm of household and industrial fabrics. In order to produce materials which cannot be made on conventional types of knitting machinery, some mills have installed so-called knitting-looms. There is talk—not very loud to be true —of cooperative research to investigate the properties desired in household and industrial fabrics, and to determine what types of knitted products meet those requirements or can be made to meet them. Once the spark is touched to start knitting mills into large-scale production of household and industrial fabrics, there are bound to be changes in technique and in organization of the industry as radical and fundamental as any which have occurred since Lee's invention of the knitting machine.

Bathing suit, with Controlastic shirring, by the Pacific Knitting Mills

Darleen covered-rubber elastic yarn is used in this foundation garment

Two-way-stretch hosiery tops made with knitted-in Laton elastic yarn

Elastic-yarn uses increase

With new applications and improved types

By HOWARD P. GALLOWAY
Assistant Editor, TEXTILE WORLD

WIDER APPLICATION of elastic yarns in the last year or two has been accompanied by introduction of one entirely new type of elastic-core yarn and improvement of several other types previously available. Two rapidly expanding uses are in manufacture of full-fashioned hosiery and shoe fabrics. The new elastic yarn is Laton.

The essential difference between Laton and all other elastic yarns is in the method by which the elastic core is covered. Coverings fall into two groups. With the single exception of Laton, cores are wrapped with yarns of cotton, silk, rayon, or wool. Usually two wrappings, wound in opposite directions from each other, are given. Laton, on the other hand, has its covering actually spun on to the core, from a strand of roving. This feature is said to give it a soft, luxurious feel, and to make possible its manufacture in sizes so fine that it can be used on the finest gage knitting machines as well as in production of sheer woven fabrics. The new yarn, broadly protected by patents, is a product of United States Rubber Co.

The broadening market for elastic yarns in the hosiery field is due to more extensive knitting of two-way-stretch tops into women's full-fashioned and seamless stockings. Hosiery so knitted fits the leg snugly and smoothly, withstands garter-pull and knee-bend better and suffers less from runs, snags, wrinkles, and crooked seams.

Issuance of licenses for use of Laton yarns in this service was begun in the latter part of 1939, after some 18 months of careful experimentation. Some Lastex is also being used. An improved type of Controlastic has been developed for this purpose. It consists of a fine core covered with Nylon yarn. Advantages cited include that it is fuzzless, comes off the package readily, is very strong, and that lace-like designs made with it stand out boldly. The yarn is being knitted into both silk and Nylon hosiery. New types of cut-rubber yarn are also being marketed for hosiery use. Filatex is being experimented with for use in full-fashioned hosiery tops, although yarns for the purpose have not been made commercially available.

Use of elastic yarns in the tops of men's half hose, children's stockings, and anklets continue to be an important field, with several producers of these yarns sharing this market.

The shoe industry is fast becoming

an important customer of mills producing elastic-yarn fabrics. This market, which began to open up a year or two ago, is steadily growing larger. The yarns are used in the form of webbings, braids, and fabrics for lamination. In the latter use, elastic fabrics, slightly stretched, are laminated with leather or such cloths as gabardine to make so-called elasticized materials. When the tension is removed, the material con-

Elastic tops incorporating Filatex yarns are a feature of these socks

tracts very slightly. Thus, shoes incorporating it have a certain amount of "give" which is said to make them look, feel, and wear better. The field, so far, is largely one for woven fabrics. Yarns being used include Controlastic, cut-rubber, and Lastex.

Bathing suit manufacturers, of course, have for some time been major consumers of elastic yarns. This remains true, with use of the yarns increasing in both woven and knitted versions. Shirring, of various types and for several purposes, accounts for considerable quantities of elastic yarn. A variety of tapes and braids also contain the material.

A number of other new uses for elastic yarns have also recently been or are now being developed. Laton, for instance, is going into underclothing, such as slips and panties, where the desire is for form-fitting qualities, while still retaining a certain amount of control. In some cases the entire garment contains elastic yarns; in others, the stretchable fabric is set in in sections, where needed. Development work is also under way in connection with use of this yarn in jackets, ski suits, vest-back linings, and other similar items.

Lastex with its largest market still the corsetry field, is finding increasing use in fabrics for foundation garments, panties, etc., particularly in the lighter weights. Sports uses include fabrics for ski suits, football pants and other athletic garments, as well as swim and beach apparel.

Controlastic, the makers point out, in addition to other uses such as in foundation garments, hosiery, bathing suits, etc., is being woven into fabrics for upholstery purposes. Here, it is said, elastic fabrics assure neater looking cushions. This results from the fact that the cloth, stretched while the chair or other piece of furniture is in use, snaps back to normal when the pressure is removed. Thus, cushions always present a smooth, neat appearance.

ELASTIC-YARN CORES, essentially, comprise only four types. These are: cut rubber, extruded latex, latex formed on a "pick-up" wheel, and rolled latex.

Cut-rubber, earliest of the elastics, is, as its name implies, manufactured in

Lastex yarns feature this swimsuit produced by Jantzen Knitting Mills

sheets and subsequently cut into yarn-like strands. The strands can be made either square or rectangular. The fineness of the yarn, of course, depends on the use to which it is to be put. Producers point out that silk-covered yarns for hosiery use may have as many as 15,000 yd. per lb. An important producer of these yarns is Darlington Fabrics Corp., whose product as Darleen.

In producing the extruded latex core, which is the basis of both Lastex and the newly announced Laton, latex is forced through a nozzle into a coagulating bath, from which the formed yarn is drawn off by a pair of rollers. This results in a solid, round, elastic core. Laton is now being offered in sizes which run between 12,000 and 15,000 yd. per lb., but the manufacturers point out that it has a wide range of size possibilities. Lastex is supplied in sizes containing up to 11,000 yd. per lb.

Elastic cores formed on a pick-up wheel are the basis of Filatex yarns. A grooved wheel picks up the latex from a bath; by the time one revolution of the wheel is nearly completed, the material has solidified and the core can be drawn off. Shape of the core is determined by the cross-section of the groove. Usually, it is more or less of a flat oval, with a tiny nub protruding at each side. The nubs, of course, are so minute as to be invisible to the naked eye. Filatex yarns now being manufactured range in size from 1,400 to 14,000 yd. per lb.

Rolled latex, which is the basis of Controlastic, is first formed as a flat strip and then rolled on itself, much as one would roll a piece of paper to form a tube. In this instance, however, the hollow center opening of the tube is practically non-existent. Gone, too, in recent years, is the inner core of yarn which featured earlier versions of Controlastic. During manufacture of cores for this yarn, it is stated, the rubber strand is so stretched that the molecules are pulled into a relatively straight line, thus giving added strength. Sizes that are available range up to 13,500 yd. per lb.

In practically every case, the larger elastic-yarn producers do their own covering of the cores, although a prominent machinery manufacturing concern

Shoe by Laird-Schober Co., containing fabric made with Controlastic

has recently announced a new rubber-covering machine which is being offered to textile mills. Also, in some cases uncovered yarns of the cut-rubber variety are knitted into fabrics, their presence being hidden by plating. Special attachments are required for this purpose.

Yarns are offered both natural and in colors, but dyeing of the covered yarns is often left to the users of the yarns who may either yarn-dye or piece-dye them.

Making pattern chains

Follow systematic method for maximum production

By F. J. QUILITZSCH

IN MAKING PATTERN CHAINS for striped outerwear fabrics, the knitter is interested not only in obtaining the exact stripe wanted, but also in producing it in the most economical way. This means that as many feeds as possible should be knitting at each revolution of the machine; otherwise maximum production will not be secured. The method employed in making the pattern chain for the fabric shown in Fig. 1 illustrates the steps to be followed. This fabric was knit on a 32-feed automatic machine.

The first step is to write down the stripe to be produced, as shown in Table I. The next step is to find out how to divide these colors to fit on the machine. This is done by listing the colors to be used in the stripe, and the number of courses as they come in the stripe, as shown in Table II. It will be seen that for the navy two feeds are needed. For the narrow white stripes four feeds are needed. For the copenhagen stripe 60 feeds are needed. After listing two feeds of navy and four feeds of white, it is advantageous to determine how many feeds of copenhagen are needed before finishing the wide white stripe. It is found that 15 feeds is a good number, as 15 divides into 60 four times and leaves 11 feeds for the white. These 11 feeds plus the other 4 feeds give a total of 15 feeds of white, which divides evenly into 75. Accordingly, the colors and number of feeds as they will be on the machine are listed as shown in Table III.

Although there are actually only three different colors, in order to make this stripe it will be necessary to use four cams on the machine. This will make four links on the chain for every revolution of the machine. A high link knits, and a low link throws the feed out of action. A sketch showing the high and low links should be made, such as in Fig. 2.

As the chain moves clockwise, it starts from the right and goes to the left. Therefore, a high link is put in the first square for two feeds of navy; next come four feeds of white, calling for another high link; then come two more feeds of navy, calling for two low links to skip the 15 copenhagen and 11 white feeds. On the second revolution there are a high link for two navy

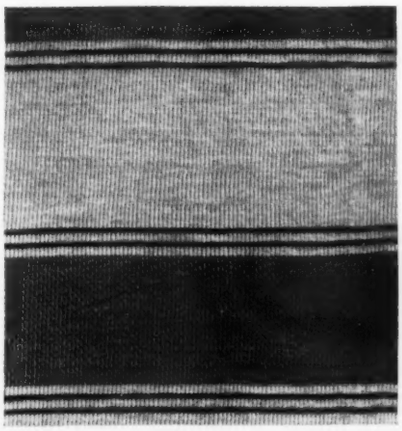


Fig. 1. Striped fabric knit on 32-feed machine (half size)

feeds, one for four white, one for 15 copenhagen (which will make one-quarter of the copenhagen stripe) and a low link to prevent the 11 white feeds from knitting. On the third revolution there are a low link to skip the navy, one to skip the four white, a high link for the copenhagen, and another low link for the 11 white. This is repeated on the fourth and fifth revolutions to complete the 60 courses of copenhagen. On the sixth revolution there are a low link to skip the navy, a high one to knit the four white, and two low links to skip the copenhagen and white. On the seventh revolution there are a high link for the navy, a high link for the four white, and two low links to skip the copenhagen and white. On the eighth revolution there

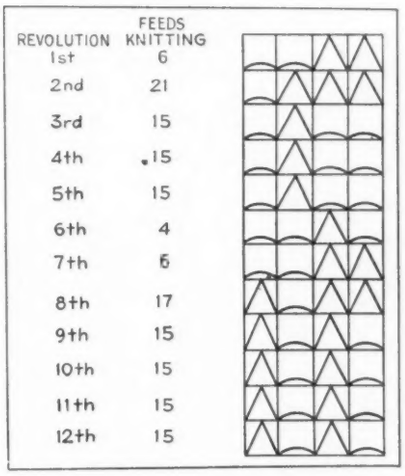


Fig. 2. Sketch showing high and low links used in making up the chain

are a high link for two navy, a high link for the four white to start the 75 courses of white, a low link to skip the copenhagen, and a high link for the 11 white. To complete the wide white stripe on the ninth, tenth, eleventh, and twelfth revolutions there are a low link for the two navy, a high link for the four white, a low link for the 15 copenhagen, and a high link for the 11 white courses.

The chain is made up from this sketch. The first link should be prick-punched to indicate where to start the chain.

To determine what production can be expected from the machine, divide the total number of courses knit in one repeat of the pattern by the number of courses which the machine would produce if all feeds were knitting. In the pattern under consideration there are 159 courses produced in twelve revolutions of the machine. With all 32 feeds knitting throughout the twelve revolutions, the machine would knit 384 courses. Hence, $159 \div 394 = 41\%$. As a 32-feed machine will produce about 10 lb. of cloth per hr. with all feeds knitting, the expected production of the striped fabric discussed would be approximately 4.1 lb. per hr.

In the case of patterns with an odd number of colors, say five, the knitter must take care to make the patterns with an even number of revolutions of the machine; otherwise the chains will not come together at the end as should be the case.

TABLE I

Courses	*Stripe*
2	Navy
4	White
2	Navy
4	White
60	Copen
4	White
2	Navy
4	White
2	Navy
75	White
159	Total

TABLE II

Color	*Courses*
Navy	2–2–2–2
White	4–4–4–4–75
Copen	60

TABLE III

Feeds	*Color*
2	Navy
4	White
15	Copen
11	White

From topper-knitter to head fixer

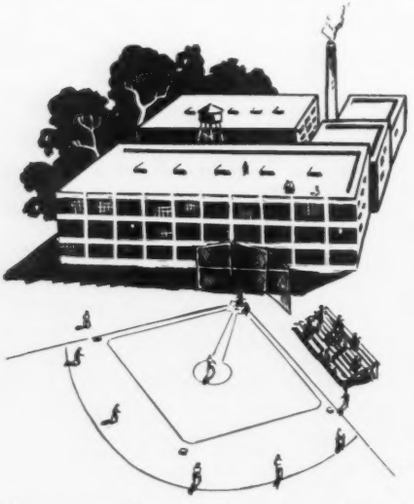
Tom Pepper's sixteen years in hosiery mills

By JULIAN W. HUGHES

TOM PEPPER had attracted some attention, locally at least, while playing on the Centerville High School baseball team. About the time Tom graduated, the owner of a hosiery mill in Centerville was seriously considering organizing a baseball club to represent his mill. It was only natural that while looking around for players for the mill club, he should discover Tom and give him a job in the mill and a berth on the team. Thus the young diamond artist began his hosiery-mill career.

Tom's first task was to learn the tedious art of picking each loop of a ribbed top onto points on transfer rings. Soon he became proficient enough to top, ravel, and transfer a rib top to the knitting cylinder without making more than a half-dozen drop-stitches. This accomplished, it was comparatively simple for him to learn how to tie on yarn, thread up the machine, and set the pattern chain.

In due time, Tom was assigned two machines on which to practice. Old Joe, the veteran fixer on the section,



They gave Tom a job in the mill and a berth on the team

cautioned the young knitter never to start up a machine with the transfer ring on the needles, as this would make a nasty wreck for the fixer to clean up, gave him some other pointers, and watched him with a wary eye as he transferred from the transfer ring to the latch needles. It was not long before the recently acquired baseball star considered himself a full-fledged knitter; but topping was too monotonous a job to suit him. Giving the excuse that looking at the fine transfer points all day long was ruining his batting eye, Tom persuaded the owner of the mill to let him learn knitting on the automatic machines.

Tom took to the automatics as a duck takes to water. Naturally, he made a few mistakes at first—one of which was racking the pattern chain around while the machine was running. He had seen experienced knitters set the chain without stopping and thought he could do it. But he was not so familiar with the manipulation of the control chain. The result was damage to needles amounting to more than his wages for a day, a lot of unnecessary work for his fixer, to say nothing of the lost production. However, he liked the machines and gained knowledge fast. He soon learned not to spend too much time examining the hosiery. He found that if he took too long looking at each sock for defects, he was likely to overlook cones running out on the yarn stands, or to fail to catch mechanical failures before they had caused too much bad work.

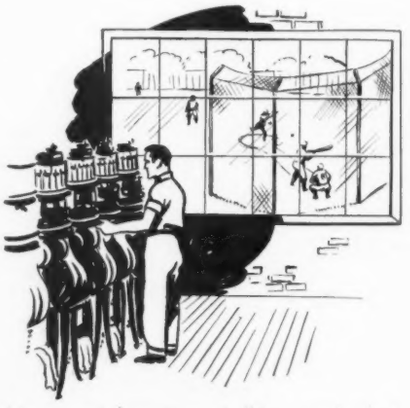
As Tom became more and more interested in his work, he spent less and less time talking baseball and playing baseball. He continued to study his machines. He was not content just to know that handling the machine in a certain way produced a certain result, but endeavored to learn the function of each part. He talked knitting machines with the older and more experienced fixers; read text books on knitting machines. His ambition now was to become a fixer.

TIME PASSED; fixers quit the mill; others were engaged—some good, some fair, but mostly floaters. It never occurred to anybody that Tom might make a good fixer. To his employers and fellow workers, Tom was just a good knitter with too much curiosity.

Then came the hosiery boom of 1926-27. Old established mills were expanding; new mills were springing up. The spiral half-hose machine had begun to take its place in the industry. Fixers were in demand; mill executives didn't bother much about references; if the applicant looked all right and could talk intelligently about knitting machines, they took a chance on him.

At this time, Frank Sizemore, a friend of Tom's, had a job as a spiral fixer in a mill in Boomtown, in the upper corner of the State. Another section of spirals was being installed alongside Frank's section, and when Frank was asked where the mill could get a fixer for them, he remembered his young friend at Centerville—his ambition to become a fixer, and his ability to comprehend the intricate mechanism of knitting machines. A few days later Tom received a letter from the manager of the mill in Boomtown offering him a job as a fixer.

Tom had never lacked self-confi-



He spent less time talking and playing baseball

dence; he knew his H-H machines and had no doubt as to his ability to handle sinker-reverse plating. But the spiral float stitch was something different—he had had no actual experience with this new method of knitting, although he had read everything he had run across on the subject. However, he reasoned that the spiral machines were not fundamentally different from the models he had been working on.

The following Monday morning found Tom in his new position. Lady Luck smiled on him; the machines were new and the patterns set up. Except for adjusting the stitch to get the proper texture and fit of the hosiery, and taking care of the needles, he had little actual fixing to do for several weeks. He made the most of this opportunity to study his machines and to pick up all the hints which his friend, Frank, was able to give him. Before Tom had been fixing a year, he could set up a pattern on a spiral

(Continued on page 76)

All names in article are fictitious.

Drives for full-fashioned machines

Advances in application of alternating-current motors

By L. H. STARK

Plant Engineer, Phoenix Hosiery Co.

NUMEROUS IMPROVEMENTS have been made in recent years in full-fashioned hosiery machines to increase production and to improve quality of the product. Machine speeds have been stepped up. Many operations formerly done by hand are now accomplished automatically by the machine. The motor plays such an important part in the successful operation of the machine that, together with its control and the mechanical connection of the control to the machine, it is in reality a part of the machine. Therefore, the responsibility for application of motor drives to full-fashioned knitting machines has been left in the hands of the machine builders. In cooperation with motor manufacturers, the machine builders have made notable advances in application of motor drives to meet the more severe duties imposed by higher machine speeds and more nearly automatic operation.

In the early days of development of full-fashioned knitting machines the d-c. motor was well suited as a drive. This was because of the ease with which the several speeds necessary in the cycle of knitting a stocking could be obtained and the required speed changes could be made automatically by connecting the motor control to the machine. In combination with a rheostat, magnetically operated contactors are used to start, slow down, speed up, or stop the machine in harmony with the knitting procedure. As far as speed regulation and control are concerned, direct current gives all that is desired. However, the production of the knitting machine is somewhat reduced by machine outage due to excessive control maintenance caused by the heavy duty imposed upon the speed regulator.

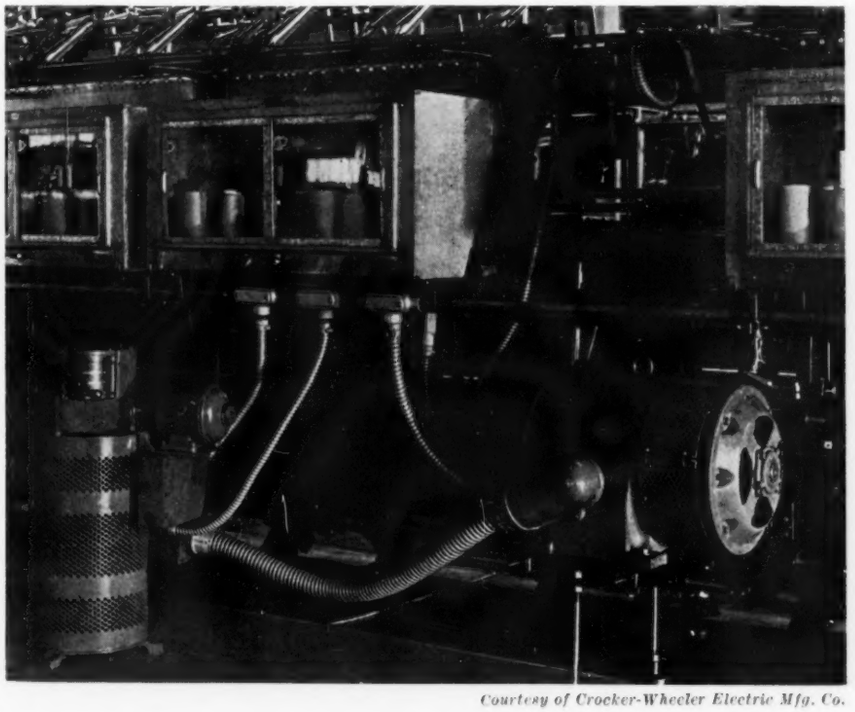
The building of a-c. motors and control with variable-speed characteristics suitable for full-fashioned knitting machine application has only recently been brought to the state where it might be considered comparable to direct current. One of the problems to be overcome in driving full-fashioned hosiery machines is the slowing down of the motor from high speed to the narrowing speed. This must be done within the space of one second or less if the machine production is to be maintained. One means of accomplishing this is by the use of two motors —one an induction-wound rotor, two-speed motor from which the high and intermediate speeds are obtained; the second, an induction type motor which gives a lower third speed. Due to the absence of complicated control, the maintenance of this is very low; however, it has the disadvantage of not being fully automatic.

Another application consists of a two-speed wound-rotor motor with resistance inserted in the low speed to reduce voltage and thus obtain a third somewhat slower speed than the second one. The objection to this arrangement is the sluggish action from the high to the narrowing speed.

TWO DEVELOPMENTS in a-c. motors which will be discussed in some detail are the B.T.A. motor, first introduced for full-fashioned hosiery machines about ten years ago by General Electric Co., and the Polyspeed motor originally applied to full-fashioned machines about two years ago by Crocker-Wheeler Electric Mfg. Co. The B.T.A. motor is an a-c. adjustable-speed motor with shunt characteristics. The rotor is wound with a primary winding connected to the power supply through collector rings. The stator is wound with secondary windings connected to commutator brush holders, each phase being independent. The rotor has another winding, the adjusting winding, separate from the primary winding and connected to the commutator.

Speed regulation is obtained by shifting the brushes on the commutator by means of a lever operated from the front of the machine, and connected to an arm on the brush holder yoke. The speed variations of this motor necessary for the knitting of a stocking are fully automatic and are obtained instantly on the high-speed machines used in present-day practice. The efficiency and power factors are better than those obtained in the standard induction type motor.

Speed regulation is obtained as follows: Closing the start pushbutton circuit energizes a primary contactor through a resistor and rectifier connecting the power circuit to the primary of the motor. At the same time the run contactor coils are energized, which connects the circuit of the secondary winding through the motor



Courtesy of Crocker-Wheeler Electric Mfg. Co.

Application of Polyspeed motor to Karl Lieberknecht full-fashioned machine

brushes to the adjusting winding. This connection provides adjustable-speed operation by shifting the brushes on the commutator.

When the stop button is pressed, the run contactor drops out, closing its normally closed main poles. These poles connect a section of the secondary windings through tapped resistance to another set of brushes, thus providing regenerative braking of the motor. Since regenerative braking requires primary excitation of the motor, the primary contactor remains closed for a definite period of time after the stop button is pressed to permit the braking action to bring the motor to rest.

The slow-down contactor and resistors provide automatic slow-down without shifting the brushes from high speed when the automatic limit switch is closed. With the slow-down contactor energized, the motor runs as a wound secondary induction motor with resistance connected to the secondary winding.

The slow-down switch is connected mechanically to some part of the machine which will give the desired speed necessary to meet the knitting requirements. The slow-speed limit switch renders both the slow-down and accelerating contactors inoperative when the motor brushes are in the low-speed position in order to obtain the highest possible starting torque, and provide operation as a B.T.A. motor. When the start button is pressed with the automatic limit switch closed and the brushes in the high speed position, the normally closed interlock on the accelerating contactor opens the slow-down contactor circuit and provides starting as a B.T.A. motor with the secondary resistance, rather than as a wound secondary induction motor. This provides high starting torque, and smooth acceleration by means of the accelerating contactors and resistors. After a definite time delay, the interlock recloses, thereby operating the slow-down contactor and causing the motor to run as a wound secondary induction motor at slow-down speed.

THE POLYSPEED MOTOR is perhaps more closely related to the d-c. motor than are other a-c. motors as far as variable-speed characteristics are concerned, because of the infinite number of speeds that can be obtained. It has a stator core and winding similar to an induction motor; the winding is connected directly to the line. The rotor winding, which is similar to the armature winding of a d-c. motor, is connected to a commutator with brushes set in a fixed position. The speed of the motor is dependent upon the voltage supplied to the rotor winding, which is applied by means of an induction-type voltage regulator, on top of which is mounted a preset head. The preset head provides for four independent speeds, which are all that are required on a full-fashioned machine. The head is divided into four sections, each provided with a circular plate which may be moved through any part of 180° by a knurled handle moving in a slot. The head is driven by a small motor which is started or stopped by means of a selector switch, mechanically connected to the machine. The motor rotates the rotor of the voltage regulator to a position corresponding to the speed required.

The power factor of the Polyspeed motor will average that of a regular induction motor. Operating characteristics meet all the requirements for high-speed operation. The motor is slowed down from high to narrowing speed instantly by regenerative braking. Starting torque is high at all speeds. The outstanding features of this motor and control are: (1) the ability to vary each speed independently of any other by changing the position of the plate corresponding to the speed desired on the preset head, and (2) the absence of a multitude of magnetic contactors, relays, and resistors, common to most other full-fashioned machine drives.

The only place where contacts are made is in the small selector switches and on the slip rings in the preset head. The current handled is so low in amperes that arcing is reduced to a minimum. Due to this condition, the cost of maintenance is low.

It will be noted that with both the B.T.A. motor and the Polyspeed motor, regenerative braking is used to reduce the speed from high to medium, or from regular knitting to narrowing. This speed reduction amounts to about 20% of the motor's high speed, and is accomplished in less than one second. The success of the application depends upon this feature.

Taking into consideration all the things that a motor and control are expected to do during the knitting of a full-fashioned stocking, one is impressed with the fact that the machine builders have done quite a commendable job in application of motor drives to full-fashioned machines. This, of course, does not mean that there is not room for further improvement. For example, hosiery manufacturers are confronted with the problem of motor-control maintenance on the newer types of high-speed knitting machines when current is interrupted from 60 to 75 times per hour. This maintenance is costly as regards labor and replacement, and machine outage may amount to from 1% to 2% of the machine production. Those of us who are responsible for uninterrupted operation, hope that eventually the electrical industry, together with the machine builders, will give us still more improved drives for the full-fashioned knitting machine.

From topper-knitter to head fixer

(Continued from page 74)

machine as quickly and effectively as could the older fixers.

It was noted that Tom made frequent visits to the looping department. Presumably this was for the purpose of making sure his loose cams were adjusted properly to facilitate looping; but no one was surprised when Eve Fisher, one of the looper operatives, announced that she and Tom were to be married. Now a family man, Tom had an even greater incentive. He gobbled up all the information on knitting which appeared in trade papers. When he read of new patents being issued for circular-machine attachments, he secured copies of the specifications from the Commissioner of Patents, in Washington, and acquired a knowledge of the new gadgets before he even saw them working. He received several increases in pay. Sixteen years after he first went to work in a hosiery mill he was promoted to head fixer.

Long before he was made head fixer, Tom had completed payments on a house in Boomtown. In lean years, he has never complained of low wages and high living costs, because he strives to keep his expenses below his wages. He realizes that his continued employment depends on the mill's consistently making products that can be sold at a profit. He goes on the principle that the way for him to earn more is to keep physically fit, stay awake on the job, keep posted on knitting-machine improvements, and know what to do without being told. Tom is interested in local government, because he is a direct taxpayer. He is a good citizen, because he has a family and home at stake. He has civic pride, because he is a part of the community. He has never entirely lost his interest in baseball, and, as manager of the mill team, is always on the lookout for good players who also have a liking for knitting-mill work.

Finishing warp-knit fabrics

Modification of methods employed for tubular knit goods

By E. S. DUNLAP
Belle Knitting Corp.

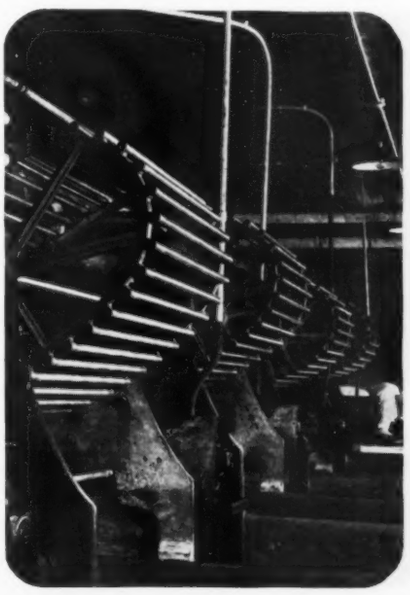
WITH THE RAPID GROWTH of the warp knitting industry in this country, many mills which have specialized in processing of circular-knit fabrics will undoubtedly be called upon to handle tricot and other warp-knit fabrics. Processing of warp-knit fabrics is similar to that of circular-knit fabrics, in that both types ordinarily are dyed on reel machines. Finishing is carried out on a tenter frame or on special equipment, such as the Tube-Tex machine. There are, however, a number of modifications of the methods for circular-knit fabrics.

Generally best results are obtained by scouring the goods thoroughly before dyeing. However, the one-bath method for scouring and dyeing has proved quite satisfactory with fabrics made from certain yarns. In the case of acetate tricot fabrics the same precautions should be taken as for circular-knit fabrics, as discussed by the author in the April, 1933, issue of TEXTILE WORLD. That is, a long bath should be used, the temperature should be raised slowly—especially on light shades, and the dye should be carefully dissolved and strained before it is added to the bath.

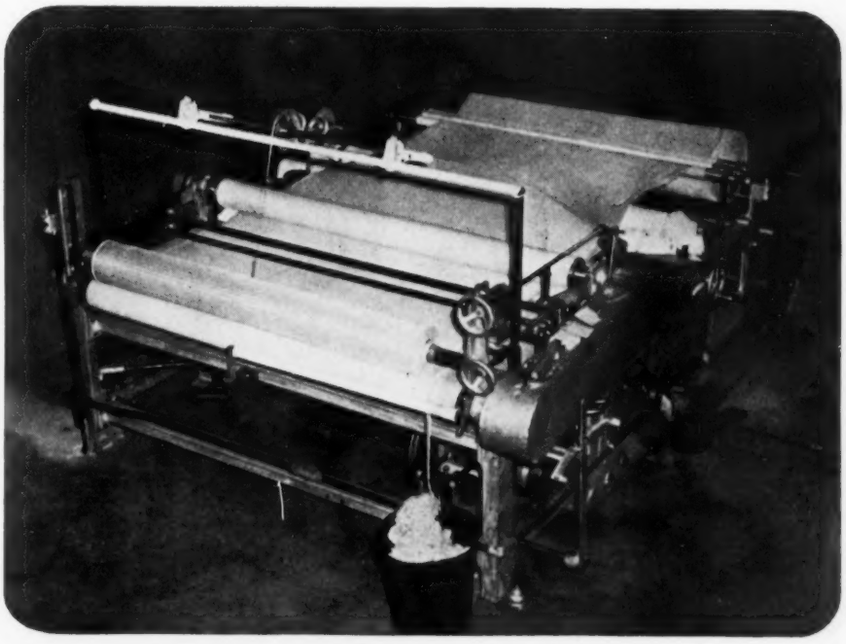
In the loading of the machine it is advisable first to fill the tub with soft, lukewarm water; next to add the scouring materials; and last to run in the goods. Pieces which are from 60 to 70 yd. long seem to process best. The number of pieces to be handled in each tub depends on the construction of the fabric and yield of the same. Incidently, it has been found that the shallow type of dye-tub gives better results with all warp-knit fabrics.

A typical procedure for scouring acetate fabrics consists of treatment of the goods at 160° F. for about 30 min. in a bath containing 1% of a good grade of olive oil soap and a mild alkali. For scouring fabrics made from other types of rayon, the usual scour employed for tubular-knit goods should prove satisfactory. If the one-bath method is employed, the dye is added to the machine at a temperature of about 120° F. Dyeing temperatures depend on the dyes used. Some dyes give level results at 160 to 180° F.; others must be applied at the boil. Selection of dyes for acetate fabrics is governed largely by the fastness requirements, which in turn depend on the use to which the fabric is to be put. Dyes used for viscose rayon warp-knit fabrics are the same as those for circular-knit fabrics, care being taken to select level-dyeing colors; from ½ to 1%of olive oil soap may be added to dyebath. One cause of trouble in dyeing acetate tricot fabrics is floating of the goods, which results in dye streaks. Use of a long bath and addition of a good compounded oil or other wetting agent is helpful.

After the correct shade has been obtained, the bath is cooled by flooding and the goods are rinsed. To minimize friction during the sewing of the fabric into garments, a small amount of softener is added to the last rinse water and the fabric run for about 10 min. at approximately 100° F. Emulsified olive oil, sulphonated olive oil, etc., may be employed as a softener. However, softeners of the cation-active substantive type are coming into greater favor, as they not only produce the desired softness, but also remain in the fabric after repeated launderings.



Warp-knit fabrics are dyed on reel-type dyeing machines



Tube-Tex tricot calendering machine as installed at Belle Knitting Corp.

Fabrics which are to be finished on a Tube-tex Machine are sewn into tubular form in the gray before dyeing on a combination folding and overlock sewing machine or on a special Tube-tex Machine designed for this purpose. With the latter type of machine, production on 60-yd. pieces is 40 to 50 pieces per 8-hr. day. After sewing and dyeing, the fabric goes to the Tube-Tex range. Here it is wet spread, squeeze-roll extracted, and dried continuously. The sewn edge is trimmed during the calendering operation when desired. The fabric is then ready for the cutting department.

New finishes for silk hosiery

Synthetic resins decrease snagging; aid merchandising

By WILLIAM T. LEGGIS

FINISHING OF SILK HOSIERY was until recently a more or less obscure procedure. Finishing was necessary to facilitate the handling of the dyed hosiery during boarding and through the several inspections and packing operations, and to maintain the stockings in a presentable and pleasing condition during long periods of storage. Little, if any, thought was given to such factors as permanence of finish and effect of finish on wearability, snag resistance, elasticity, and recoverability.

The last few years have witnessed a new interest in hosiery finishes. Merchandisers discovered the great promotional value of stressing the finish of their hosiery. As a result, scores of "new" hosiery finishes began to make themselves known through advertisements which emphasized finish above all other features of the hosiery offered for sale. There appeared a galaxy of fine-sounding, catchy names for these finishes. In some cases these so-called new finishes were only new names applied to the customary, practically universally used, hosiery finish composed of a delusterant, a splash-proofing agent, a sizing material, and a finishing oil. In other cases, the finishes were one of the newer types containing a synthetic resin.

Before discussing the place of synthetic resins in finishing hosiery, it is well to consider the results which hosiery finishing is meant to accomplish. Primarily, a hosiery finish is used to seal the filaments of the silk together so that the fabric will have a greatly reduced tendency to snag during manufacturing operations subsequent to dyeing, and during the sale and wearing of the hosiery. Secondly, hosiery finishing is designed to yield a salable product which has all the necessary requisites to satisfy the most critical feminine purchaser. Other purposes for which hosiery finishing is carried out are all related, directly or indirectly, to the foregoing objectives. These include controlling luster, preventing the hose from becoming frayed, improving appearance resulting from faulty manufacture, imparting resistance to water spotting, improving resilience of hose to insure satisfactory fit, and lubricating of fibers to minimize pops and runs.

As stated above, the finishes that are almost universally used are compounded of a delusterant, a splash-proofing agent, a sizing material of carbohydrate or protein nature, and a finishing oil. The splash-proofing compound has a tendency to shrink the stitches, straighten faulty or sleazy knitting, impart body, and provide a desirable, smooth effect. It is evident that it is too valuable an agent to dispense with. The delusterant is needed to yield the soft, dull effects now in

Finish must be properly applied

vogue. The finishing oil is essential to facilitate boarding and to impart the desired handle. Therefore there remains only the sizing material—usually dextrinized starch or gelatine—which may be replaced in part or whole by synthetic resins or other plastics.

SUITABLE SYNTHETIC RESINS have been offered recently to substitute in part for the sizing materials heretofore recommended. The main purpose of the resins is to increase the permanence of the entire hosiery finish. A truly permanent hosiery finish which sheathed the silk yarns would enable the hose to retain its snag-resisting properties and its desirable feel and drape throughout the life of the stocking. However, in most cases it has not proved practical to apply totally permanent finishes to silk hosiery. The majority of silk hosiery finishes of the permanent type are in reality only semi-permanent; that is, their effectiveness decreases considerably after six to eight normal washings.

The general method for making these semi-permanent finishes is to use the regular delusterant, splash-proofing compound, and finishing oil, and to replace from one-third to one-half of the sizing material with a suitable synthetic resin. Greater permanence can be obtained by incorporating a cation-active finishing oil in the formula. Naturally the resin used must be of a type which is compatible with the other finishing ingredients, and which on drying becomes an integral part of the entire finish. As a rule, the larger the percentage of resin used, the greater is the degree of permanence of the entire finish. However the resin must be used judiciously and compounded intelligently with the other ingredients.

The following results of Frazier tests illustrate the effect which may be produced by means of resin finishes. The tests were made on the same type of hosiery, boiled-off and dyed in the same bath. Samples of hosiery were taken from the batch before finishing and subjected to the following treatments: (1) treated with resin only, (2) treated with resin and splashproof, and (3) treated with resin, splash-proof, and oil. Hosiery treated with resin only withstood 110 cycles on the Frazier machine; that treated with resin and splashproof withstood 1,100 cycles; that treated with resin, splash-proof, and oil withstood 4,400 cycles.

The fact that the hosiery treated with resin alone withstands such an extremely low number of cycles indicates the resin acts only as a binding and sizing agent, but lacks the necessary qualities to impart smoothness, softness, and lubrication. Resin and splashproof together give better results. Resin, splashproof, and oil provide a remarkable degree of improvement.

The claims made by various manufacturers of semi-permanent hosiery finishes differ considerably as regards increased resistance of the hosiery to wear and abrasion and performance under the Frazier test. All manufacturers state that resistance to snagging is improved and maintained over a longer period. All agree that the synthetic resins must not be used alone, but must be intelligently compounded with the usual finishing ingredients.

It is evident that the permanent and semi-permanent hosiery finishes require a great deal more study in order that they may be more thoroughly understood. Each mill must work out its own problems and base its conclusions on its own experience.

TEXTILE EQUIPMENT NEWS

Pre-boarding Machine for Nylon Hosiery

For pre-boarding Nylon hosiery, Proctor & Schwartz, Inc., 7th St. & Tabor Rd., Philadelphia, has introduced a single-operator machine in which the stockings are placed, on forms, in a pressure chamber and subjected to live steam, usually at a pressure of from 5 to 15 lb. The time necessary to steam the stockings varies from 2½ to 5 min. Pre-boarding, necessitated by certain of the physical characteristics of Nylon, consists of "setting" the shape of the hosiery before dyeing. If this is not done, such creases as the hosiery receives during dyeing cannot be removed.

The new machine has two sets of 24 hosiery forms each, mounted on movable carriages. These forms are made of rolled sheet aluminum, with a hard, smooth finish. Each form has a detachable toe, and foot size may be changed in a few seconds.

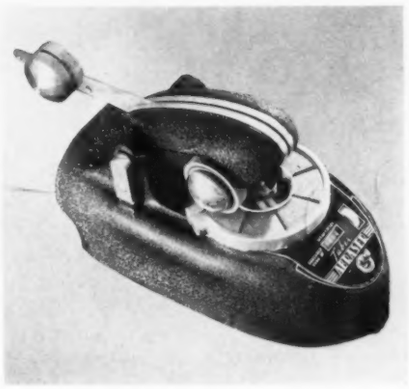
In operation, one carriage is placed in the boarding position; the other is under the pressure chamber. The operator pushes a button which starts the chamber descending, then pushes a foot button which starts the board revolving. As each form stops in front of the operator, one stocking is stripped and dropped into a basket or dye bag. The operator then pulls a stocking on the form. The stocking is dry, and can be boarded more swiftly than a damp one. The carriage then turns enough to allow another form to come to rest in front of the operator, etc.

By this time the steam has turned on automatically, to pre-board the carriage in the chamber. The operator continues to board, and when the 16th form comes to the boarding position the steam inside the pressure shuts off automatically and is exhausted. When the 20th form comes before the boarder, the pressure chamber automatically starts to rise, and when the operator has finished boarding the 24th form, the pressure chamber is in the raised position, having stopped automatically at the proper height, and the cycle is ended. The operator then pushes the carriage underneath the pressure chamber, pushes the button which starts the chamber down, and the cycle is repeated.

Approximate production on the machine ranges from 13 to 15 doz. pair of Nylon stockings per hour, carriage speed being adjustable to suit the skill and speed of the operator.

Abrasion Tester

Introduction of the Taber abrasion machine for making wear tests on textile materials has recently been made



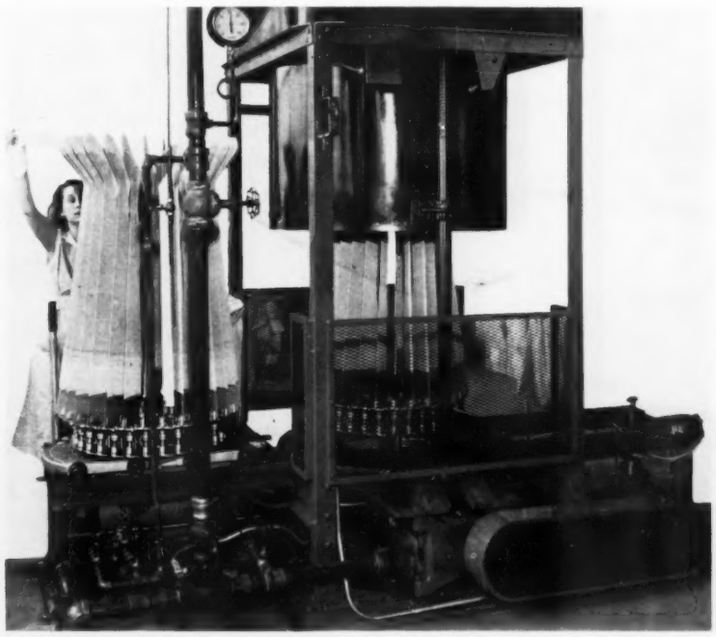
Abrasion tester (Suter)

by Alfred Suter, 200-5th Ave., New York. The machine functions by means of two abrasive wheels which contact a continuously rotating mounted sample of the material to be tested. The wheels are said to produce a result very similar to the wear of actual service, since they alternately rub back and forth and at the same time criss-cross their paths.

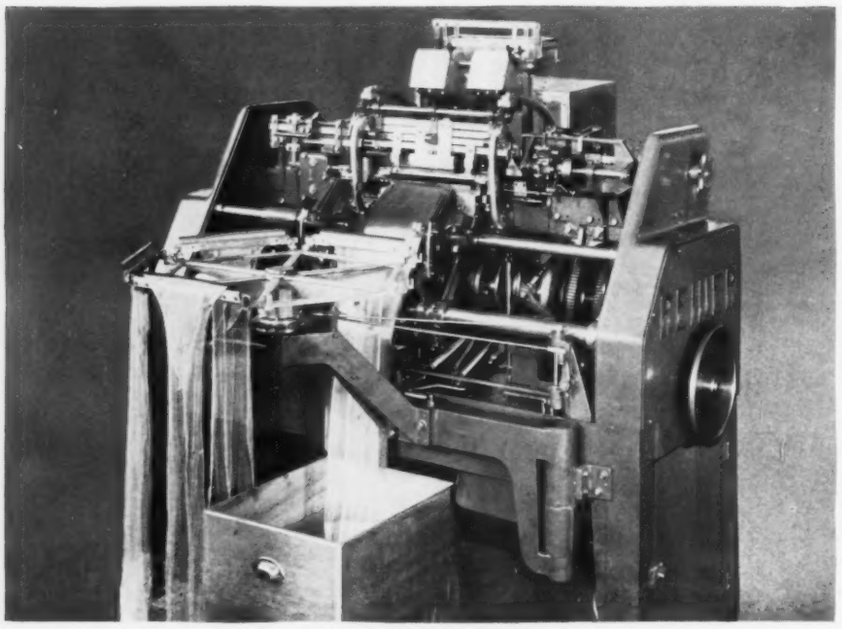
A dual blower system provides separate streams of air for cooling of motor and specimen holder, thus preventing deterioration which might accompany heat rise. Means are provided for recording the number of test cycles to which the sample is subjected.

The tester, it is said, can be used

Boarding Nylon hosiery on new pre-boarding machine. Other carriage, loaded, is inside pressure chamber



Back view of machine. Operator is stripping and reboarding carriage which has been in pressure chamber. Chamber is descending over just-boarded carriage. (Proctor & Schwartz)



Heeler (Reiner)

on a variety of woven and knitted fabrics including, with certain added attachments, women's hosiery.

Heeler for Full-Fashioned Hosiery

Robert Reiner, Inc., Weehawken, N. J., will exhibit at the Knitting Arts Exhibition, Philadelphia, April 15–18, a new machine for the purpose of inserting French heels in full-fashioned stocking blanks knitted in a continuous operation on either a regular legger or single-unit machines. The machine is an improvement on the machine introduced by this company about two years ago for inserting heels in blanks, on which the heels are automatically connected, during knitting, on multiple-section heeling machines.

The new machine, known as the Auto heeler, is said to show decided advantages over this multiple-section machine in simplicity of operation and reduction in cost. In operation, a topping girl sits between two heelers and places filled transfer bars first on one and then on the other. All other functions—transferring, cutting of yarn, pressing off, and going back into starting position—are automatically accomplished by the machine, and said not to require any attention by the operator. The heeler operates at speeds of from 90 to 120 courses per min.

Advantages cited, in addition to decreases in actual knitting costs, include elimination of ravel-course waste, elimination of silk lot division, economical production of proportioned stockings, and other savings.

Paper Indicates Temperature Changes

A new chemically-treated paper which changes from white to deep blue when temperature rises above a predetermined point, is manufactured by Nashua Gummed & Coated Paper Co., Nashua, N. H. The paper has an opaque white coating of a material which melts sharply at a definite temperature, indicating positively by change in color that the surface with which the paper is in contact has reached that degree of heat. It can be made for controlling many temperature limits.

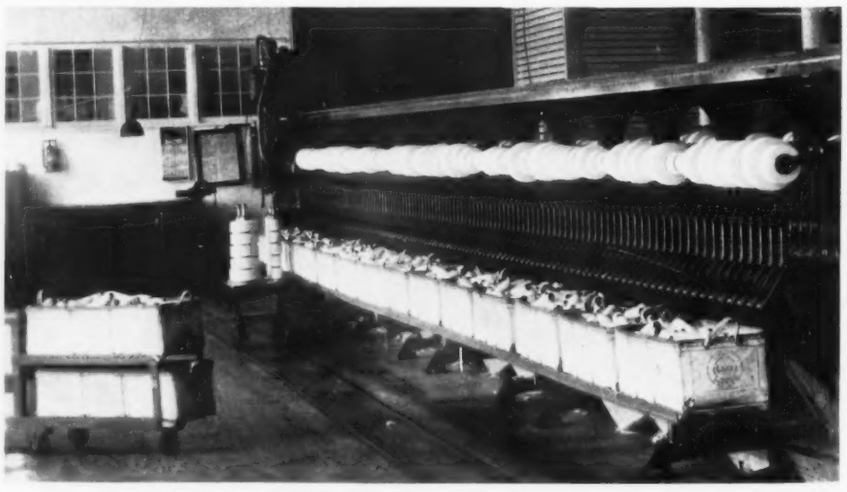
The paper was designed originally for use in measuring temperature of ironers in laundries, but is said now to be finding wide application in textile and other industries, wherever efficiency depends upon a limit of temperature.

Cotton Bale Jack

The Simplex cotton bale jack, which is said to make bale sampling faster, safer, and more economical, has been introduced by Templeton, Kenly & Co., 1020 S. Central Ave., Chicago. The jack is mounted on rubber-tired wheels and can be easily transported from place to place. In operation it is placed directly in front of the bale to be sampled and an adjustable bale fork is raised or lowered so that it will engage the bale when the jack is operated. Operation of the jacking mechanism causes the fork to lift the bale so that it can be sampled from the bottom. To sample a bale from the top, the bale above it is lifted. The jack has a rated capacity of 5 tons.

Yarn Handling Method

W. T. Lane & Bros., Inc., Poughkeepsie, N. Y., has developed an improved method of handling warp yarn from spinning frames to spoolers. The method is said to be especially adapted to mills using the Barber-Colman system of automatic spooling. Warp spinning frames are doffed directly into baskets carried on a specially designed double-deck doff truck, which has a basket for each side of the frame conveniently placed to receive the bobbins. The baskets are then transferred to spooler frames. Here, instead of the usual trough into which bobbins are dumped, there is provided a continuous angle-iron support the full length of the frame. The baskets are placed directly on the irons. Trucks are provided with sufficient baskets to supply an entire side of a spooler.



System simplifies handling of warp yarns (W. T. Lane)

Advantages of this system are said to include elimination of damage to bobbins, such as soiling, sluffing off, etc., which might result from frequent or unnecessary handling, and release for other work of some of the helpers formerly required to keep a proper supply of bobbins on spoolers.

Tabulator

Expected to be of considerable interest to textile mills is a new tabulating device being introduced by Denominator Co., Inc., 261 Broadway, New York. The device consists of a series of counters, each with an individual key which is operated by finger pressure. It eliminates the old tally method of tabulating a number of different items.

One textile use to which the tabulator has been put is in microscopic analysis to determine the percentages of various fibers in a blend. The machine is equipped with two or more

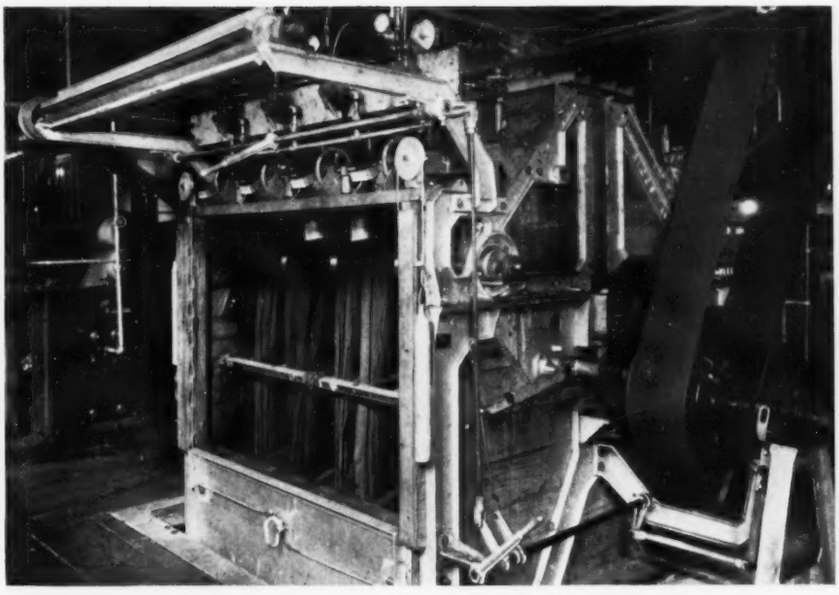
Tabulator (Denominator)

keys, each representing a type of fiber. Each time a key is pressed, one count is recorded in the counting unit controlled by that key. Keys are operated by the touch system, which permits the eyes to be continually on the microscopic field throughout the entire count. The machine is said also to have proved useful in examining wool tops for counting the vegetable matter, neps, and burrs.

Improved Induction-Motor Construction

The advantages of longer motor life with less maintenance are expected to arouse considerable interest among textile mills in a new type rotor construction announced by General Electric Co., Schenectady, N. Y. The new method uses cast-aluminum rotors in the larger sizes of double-squirrel-cage motors for high-starting-torque, low-starting-current service. Called the Valv-amp rotor, the method makes use of a unique shape of rotor slot and a special method of assembling rotor punchings to control the flow of starting current. As a result, current flows in the outer squirrel-cage when the motor is started, thus producing high-starting torque. Then, when the motor comes up to speed, current flows through the entire rotor "winding." The development is said to make practicable for the first time casting of double-squirrel-cage rotors in the larger sizes.

Advantages cited for the new type rotor, in addition to long life and low maintenance, are simplicity of construction, and permanence of electrical charactertistics.



Four-roll fulling mill (Riggs & Lombard)

Synthetic Pads Regulate Tension

Use of Neoprene, synthetic rubber-like material produced by E. I. du Pont de Nemours & Co., Wilmington, Del., as a friction-pad material for spool tension springs on textile machinery, has recently been announced. The purpose of the pads is to provide a smooth, even tension which will exert exactly the same drag on each spool from which yarn is being drawn. It was found possible with Neoprene to decrease somewhat the spring tension required. It is stated that, since Neoprene is synthetically produced, it is controllable so that there is practically no variation in coefficient of friction from one pad to another. Further, since the material is not harmed by exposure to oil and grease, coming in contact with these substances will not cause it to deteriorate and become soft.

Four-Roll Fulling Machine

A fulling mill which will handle at the same time four different fabrics with different fulling requirements, has been introduced by Riggs & Lombard, Inc., Lowell, Mass. The machine is said really to be four fulling mills in one. Four separate bottom rolls are located on a continuous shaft, while each top roll has a separate pneumatic pressure device. Separate guides are provided for each fabric, and pressure in each packing box is independently adjustable. All parts contacting the cloth are made of stainless metal.

The machine is said to be suitable for fabrics such as worsteds, where reduction in loading time is important.

Useful Accessories for Textile Mills

Controllers. Taylor Instrument Cos., Rochester, N. Y. have introduced a redesigned line of air-operated recording and indicating controllers for temperature, pressure, rate of flow, and liquid level. The instruments incorporate a supplementary control feature which makes control-valve corrections according to the rate of control-point deviation.

Pipe. Walworth Co., 60 E. 42nd St., New York, is making Ni-Resist pipe composed of cast iron containing nickel, copper, and chromium; it is especially adaptable for use in handling waste liquors.

Ball Bearings. Norma-Hoffman Bearings Corp., Stamford, Conn., has an-

nounced that its small sizes, which have heretofore been available in retainerless type, can now be obtained as standard with retainers. Bore dimensions of these bearings range from $\frac{1}{8}$ to $\frac{1}{4}$ in.

Meters. Republic Flow Meters Co., 2240 Diversey Pkwy., Chicago, is introducing a new mechanical meter of the ring-balance type for metering steam, water, gas, air, etc., at static pressures up to 1,000 lb. per sq. in. Meters are furnished with any combination of indicator, recorder, and cyclometer type integrator.

Moisture Teller. Harry W. Dietert Co., Detroit, Mich., has added a new size to its line of moisture tellers. The new addition takes a sample pan $2\frac{3}{4}$ in. in diameter and $1\frac{1}{4}$ in. in depth. Samples are said to be dried to constant weight in as short a period as 1 min. for many materials.

Fluorescent Fixture. Benjamin Electric Mfg. Co., Des Plaines, Ill., is marketing a porcelain enamel lighting unit for two 48 in. fluorescent lamps. Spaced on 10 ft. centers and 10 ft. from the floor, uniform illumination of 20 footcandles over the working area is secured from this unit, the manufacturers state.

Unit Heaters. Grinnell Company, Inc., Providence, R. I., has announced that built-in individual automatic control of both day and nighttime temperatures is now provided in its line of automatic Thermolier unit heaters. The control is said to be easily added to existing units.

Pyranol-filled Capacitors. General Electric Co., Schenectady, N. Y., is offering Pyranol capacitor equipments, designed for platform, floor, or ceiling mounting. The space-saving feature of ceiling mounting is cited as a distinct advantage.

Explosion-proof Motors. Reliance Electric & Engineering Co., 1088 Ivanhoe Road, Cleveland, is offering explosion-proof d-c. motors in a range of sizes from 1 to 75 hp. The motors are of enclosed, fan-cooled design, with ball bearings.

Heaters. Modine Manufacturing Co., Racine, Wis., has announced a new line of unit heaters said to incorporate such features as sound silencing, a safety fan guard, rust protection by the Bonderizing process, and streamlined appearance.

Sealed Bearings. Fafnir Bearing Co., New Britain, Conn., has announced a line of permanently sealed ball bearings; seals are built integral with the bearings themselves, and are said to give complete protection in keeping grease in and dirt out.

New Dyes and Chemicals

Absorbency-Increasing Agent

Development of a new process for increasing the absorbency of yarns or fabrics made from cotton, rayon, or other cellulose fibers has been announced by the Sorbtex Foundation, 210 East Franklin St., Richmond, Va. The process consists of treatment of the textile at a temperature of 120 to 140° F. with a new inorganic chemical compound called Sorbtex. The treatment is said to increase absorbency up to 500%, depending on the type of fabric and to give an average increase of 10% in tensile strength. The treatment is recommended for use on towels, face cloths, etc. Such materials are said to be ready for use without breaking in. The treatment is said to render the goods permanently absorbent. The compound is also offered for preparing piece goods for Sanforizing or other preshrinking processes.

Sorbtex is supplied as a concentrated solution which is diluted before use. It is generally applied in the last operation before drying, but can be applied to gray goods. Yarns or fabrics can be treated as fast as they can be run through the solution, and no special equipment is needed. It is stated that Sorbtex has no effect on dyes, does not cause yellowing of white goods, has little effect on the handle or weight of the textile. A gallon of Sorbtex will treat from 100 to 500 yd. of goods, depending on the type of material being treated.

Cleaning Compound

Bigelow-Sanford Carpet Co., 140 Madison Ave., New York, has announced Dri-sor-bene, a cleaning compound said to be harmless to all fabrics, and recommended for use whenever soap or wet cleaning may be injurious. The product comprises an absorbent base combined with a volatile solvent. It is expected to be used by cleaners, institutions, and carpet and upholstery manufacturers, using standard cleaning equipment. The cleaner, which is in the form of a moist powder, is sprinkled on, brushed in, scrubbed—without water, allowed to dry, then vacuumed or beaten out. It is pointed out that the cleaner can be used for removing yarn oil stains or degreasing carpet faces, without affecting face textures or causing any ring, and that it is harmless to fugitive colors.

Although developed originally for use on hard-twist-pile carpets, Dri-sor-bene has, according to the manufacturers, been found suitable for cleaning a variety of other articles. Included among these are textured fabrics, upholstery and drapery cloths, tapestry or damask covered walls, etc.

Slip-Proofing Agent

Warwick Chemical Co., West Warwick, R. I., announces the development of an improved slip-proofing agent. The new product, called Weave-Lok, is a resin finish primarily recommended for underwear fabrics, linings, and dress fabrics to prevent pulling at seams, slipping, sagging, or fraying. Weave-Lok is described as a self-contained product, merely requiring the use of 2 to 4% solution without the addition of any other materials, although finishing oils may be used in combination with it. It is said to impart a soft hand, without any trace of harshness or brittleness. It is stated that the finish is permanent, being unaffected even by dry-cleaning.

Sizing Assistants

Two new softeners for use in sizing of viscose type spun rayon yarns, and combinations of viscose staple with acetate and wool, have been announced by National Oil Products Co., Harrison, N. J. These products, Nopco 1111 and Nopco 1227-B, are described as non-hygroscopic softeners for use in the sizing mixture. Among the advantages cited for Nopco 1111 and Nopco 1227-B are reduced shedding, increased flexibility and elasticity imparted to the size film, superior lubrication for yarn surfaces and elimination of brittleness in warp yarn. It is stated that their use will increase loom production through fewer stops for warp breaks, increase the tensile strength of the yarn, and facilitate removal of the size and handling in the slasher room.

Vat Dyes

E. I. du Pont de Nemours & Co., Inc., announces the following new products: Leucosol Red B Paste, an anthraquinone vat color producing bluish shades of red on cotton and viscose rayon which are very fast to light in medium to heavy shades and very fast to 2° Bé. chlorine and power laundering with chlorine.

Ponsol Brilliant Violet 3B Paste, a

vat color producing bright bluish shades of violet on cotton and viscose rayon; it possesses very good fastness to peroxide bleaching, cross-dyeing, perspiration, and laundering with and without chlorine, and shows good resistance to light and chlorine bleaching.

Paraffin Wax Emulsifier

Development of an emulsifier for paraffin wax has been announced recently by National Oil Products Co., Harrison, N. J. This new emulsifier, named Nopco 2251, is a heavy, tan-colored paste that is mixed with paraffin wax to make the wax water dispersible or emulsifiable. The manufacturer states that the new emulsifier is a chemically compounded material which, upon rendering the wax water-soluble, is capable of producing a stabilized emulsion spontaneously and without the application of energy in the form of rapid agitation or shearing effect, for example as obtained in a colloid mill. No special equipment is necessary.

New Publications

Cost-Finding Textbooks

ELEMENTARY TEXTILE COSTING, Parts II and III; Campbell and Willis; H. H. Willis, Clemson, S. C.

These companion textbooks, designed to be used together, are employed at Clemson Textile School in conjunction with Lockwood and Maxwell's "Textile Costing—An Aid to Management." Part II presents a typical system for computing costs of cotton gray goods. Part III is a student's work book containing blank forms for use in setting up a textile costing system.

Mathematics in the Mill

TEXTILE MATHEMATICS; Willis, Dunlap, Cartee, and Moore; H. H. Willis, Clemson, S. C.

This textbook deals with calculations essential in cotton-yarn manufacturing and in weaving. The book, which is now being used at Clemson Textile School, is suitable for use by students in evening classes in textile mills and by other mill men who wish to brush up on their knowledge of mathematics as applied to cotton-manufacturing problems.

Agriculture and Industry

THE AGRICULTURAL INDUSTRIES, by Deane W. Malott and Boyce F. Martin; McGraw-Hill Book Co., Inc., New York; $4.00.

This is one of the best books on the relation of agricultural problems to those industries which use the products, that it has ever been our good fortune to read.

The authors take the foremost agricultural products of this country—dairy, livestock, cotton, grain, sugar, tobacco, and wool—and dissect each of these and their related industries. They do a thorough job of clinical analysis of the problems from the home-base, which is the farm, all the way through to the final manufacturing and distribution point. They are completely fair, and entirely practical in their findings which are presented in a lively and interesting manner.

Of particular interest to textile readers is the chapter on Cotton and the Cotton-Textile Industry. This is a masterly analysis of the ills of the cotton business—in all its various phases—for the authors in their impartial manner spare no section. They explore the effects the various pieces of Government crop-control legislation have had on cotton and cotton manufacturing problems. Stating that the actions of the Government have had an adverse effect on many concerns in the cotton trade, that increased prices through artificial means have undoubtedly affected demand and tended to reduce the consumption of cotton, they predict no Governmental program can be successful if it initiates policies detrimental to American cotton in world markets.

Fortunately the authors do not stop with criticism. They point the way to some solution of the cotton problems through suggested closer inter-relation of the cotton, wool, silk and rayon industries for better styling of fabrics; urge the increase of promotions for new uses, pointing out that it is no overnight program, but one that may be seven-times-seven-years in length.

This is a very worth-while book, and one that every textile manufacturer and executive should study with care and consideration.

Coal and Coal Fires

HOW TO BUY, SELL, AND BURN COAL, by Thomas A. Marsh; published by the author at 5625 Kenwood Ave., Chicago; $1.

This is a pocket-size book which treats of the selection of coal, methods for cutting fuel bills, stopping smoke, increasing efficiency, raising steam output, and overcoming fuel-burning difficulties.

Cotton Fertilizer Bags

UTILIZATION OF COTTON AND OTHER MATERIALS IN FERTILIZER BAGS; by R. J. Cheatham and Robert B. Evans, Bureau of Agricultural Economics, Washington, D. C.

This report is based upon a study made to obtain a quantitative knowledge of the trend and present position of cotton as a bagging material for fertilizer and to ascertain the factors determining its use for this purpose.

Loom Parts in French and English

DICTIONARY OF CROMPTON & KNOWLES LOOM PARTS (French-English and English-French), by Henri A. Chaine; published by the author at 620 Rue Brock, Drummondville, Quebec, Canada; $2.

This pocket-size book contains 280 pages devoted to English-French and French-English translations of more than 38,000 technical terms relating to Crompton & Knowles looms. The book is sectionalized; names of parts concerned with a particular loom motion can be quickly found by turning to the appropriate section. Reference is further simplified by an index indicating the pages on which each motion is covered.

News of Suppliers

Crompton & Knowles Loom Works, Worcester, Mass., have elected Frederic W. Howe, Jr., Charlotte, N. C., and Albert Palmer of Worcester, as members of the board of directors. Albert W. Muir, Jr. was appointed credit manager. Mr. Palmer spoke on "Modern Looms" at a meeting of the American Association of Textile Technologists held April 3 in New York.

Warwick Chemical Co., West Warwick, R. I., announces that Raymond Pingree has joined the staff as chief chemist. Harold W. Rose has resigned as sales manager and also as vice-president of Impregnole Corp., a Warwick subsidiary.

Whitlock Mfg. Co. is the name adopted by the stockholders of Whitlock Coil Pipe Co., Hartford, Conn., to

replace the title under which it has done business for 50 years. Management, organization and products remain unchanged.

Foster Machine Co., Westfield, Mass., announces that T. E. Connor, sales manager for several years, will retire May 1, and will be succeeded by Webb Durham, who is now southern manager for the company. Mr. Durham will move to Westfield from his present residence at LaGrange, Ga. Mr. Connor, who is also vice-president and assistant treasurer, will continue with the company but in a less active capacity. Foster will continue to be directly represented in the South by Edward C. Connor, at the southern office, Johnston Bldg., Charlotte, N. C., and in the Atlantic territory by Fred P. Brooks, Decatur, Ga.

American Paper Tube Co. has appointed M. Bradford Hodges, Atlanta, Ga., who has been southern agent for Shambow Shuttle Division of the company, to act henceforth as agent for all the products of the company.

Trumbell Electric Mfg. Co., Plainville, Conn., held a sales school at its home office Mar. 28 and 29, attended by Trumbell salesmen and distributors in the eastern and southeastern territories. It was repeated Apr. 11 and 12 at the company's Ludlow, Ky., plant for men from the midwest and southwest territories.

National Oil Products Co., Harrison, N. J., has re-elected Charles P. Gulick, one of the founders of the company, as its president after a two-year absence from that post. Mr. Gulick will also serve as chairman of the board. He succeeds John H. Barton who retired as president on Mar. 1. Chester A. Gage, vice-president, and, for the last 15 years

T. E. Connor, who is retiring as sales manager of Foster Machine Co.

Webb Durham, who becomes sales manager of Foster Machine Co., on May 1

manager of the midwestern division at Chicago, has been named vice-president in charge of sales, and has joined the company's New York executive staff. Milton J. Heim, manager of National's central division at Philadelphia, has succeeded Mr. Gage at Chicago. Donald D. Pascal, head of the service department at New York, has succeeded Mr. Heim at Philadelphia. Philip M. Liner, who for many years has covered the southern New England States in a supervisory and sales capacity, has been appointed manager of National's New England division at Boston.

Alco Products Division of American Locomotive Co., New York, is now under the managership of Hugh M. Corrough who has been with that division since 1936.

International Business Machine Corp., Endicott, N. Y., has received a plaque giving highest honors in the 1939 Statewide Accident Prevention Campaign conducted by Associated Industries of New York State, Inc., for operating nearly 2,000,000 man-hours without a lost-time accident.

Crocker-Wheeler Electric Mfg. Co., Ampere, N. J., has elected Edward S. Perot as president of the company. After a broad business experience, he joined Crocker-Wheeler early in 1939 as executive vice-president, and was elected to the directorate in the latter part of June. Other officers elected were: Wallace E. Brown, vice-president; Ben D. Christian, vice-president; Edward C. Jones, secretary; and Kenneth S. Murray, assistant treasurer.

Permutit Co., New York, has elected S. B. Applebaum, for some time vice-president and secretary of the company, as a member of the board of directors. He has been with the company nearly 26 years.

William B. Lawson, Inc., Cleveland, Ohio, has been organized by William B. Lawson, formerly of Harshaw Chemical Co. and International Nickel Co., to deal in industrial chemicals, oils, and non-ferrous metals. Offices are in the Union Commerce Bldg., Cleveland.

Cochrane Corp., Philadelphia, announces that Charles M. Chapman is

HERE ARE ADDITIONAL "MODERN PIONEERS"

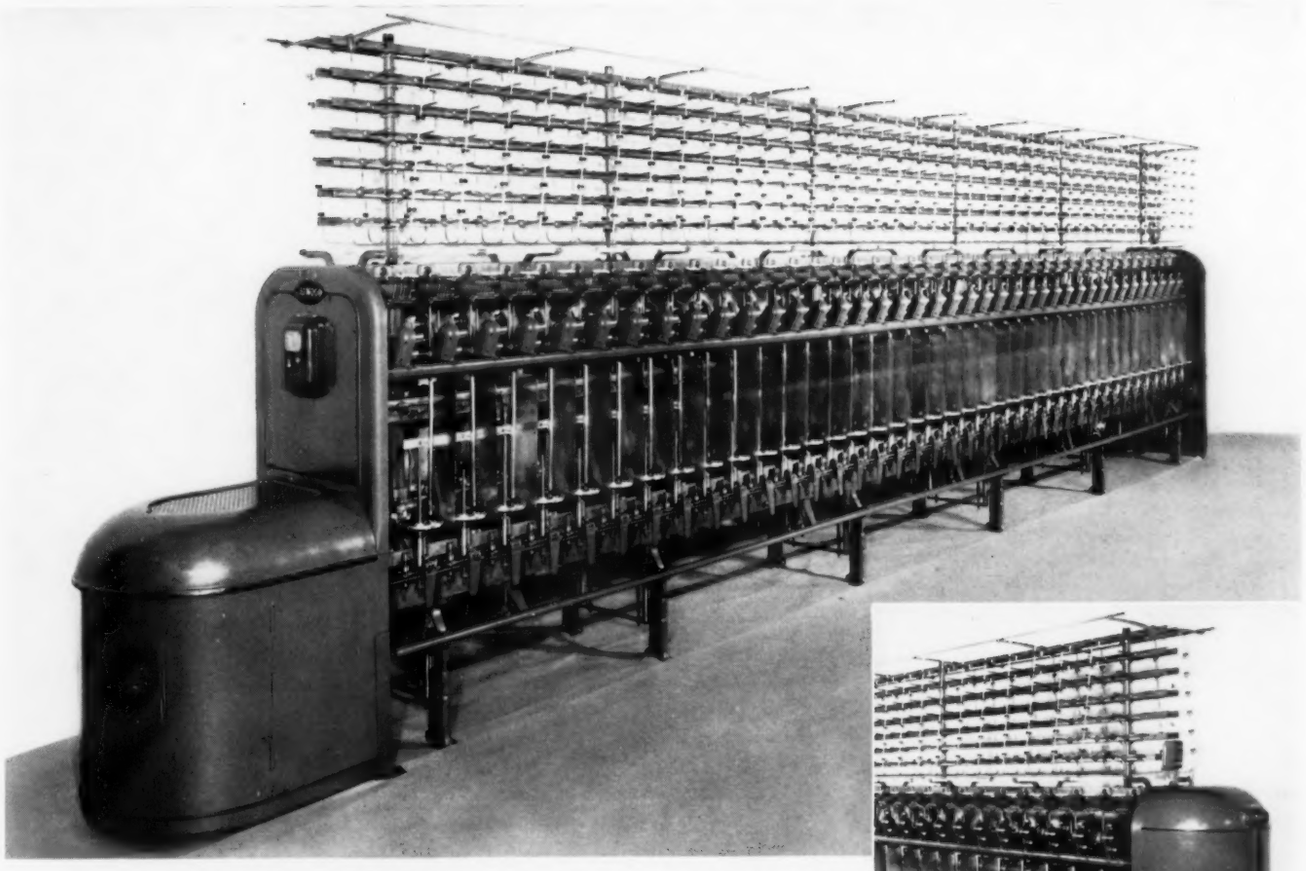
C. E. Mason, director of Control Research of Foxboro Co., Boston, Mass., who received award for work on control instruments.

Harry S. Drum, of Smith, Drum & Co., Philadelphia, who received the "Modern Pioneer" award for his work on textile processing machinery.

E. C. Gwaltney, Saco-Lowell Shops, Biddeford, Me., who received the award jointly with two others for work on heat-resistant cotton yarn for tires.

James Cox of Hygrade Sylvania Corp., Salem, Mass., a pioneer in fluorescent lamp development. Other "Modern Pioneers" were shown on page 45, March issue.

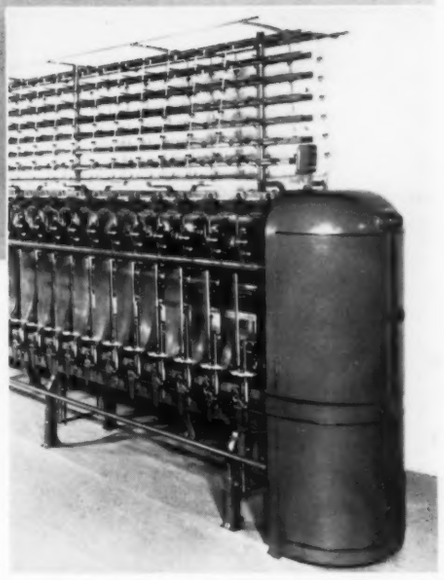
EXHIBIT PREVIEW!



of the NEW ATWOOD "5B"

New in design throughout, greater in performance, more broadly useful and applicable to modern silk and rayon yarn production needs than ever before—here is an ultra important development in doubling and twisting that you must not miss.

See it in full operation at the Knitting Arts Exposition (right opposite the main entrance), or write our nearest office for the whole story.



Section of the new ATWOOD "5B" from the Twist Unit end.

Headless Package UpTwisting
— a development of interest to many makers and users of silk and rayon yarns. Demonstrated at the Show.

The Atwood UniRail Twister
— the precision machine for twisting silk and rayon yarns on large or balanced packages. See it at the Show.

WATCH FOR FURTHER ANNOUNCEMENTS
Be sure and inspect the Atwood Exhibit at the Knitting Arts Exposition or get in touch with

THE ATWOOD MACHINE CO.

STONINGTON, CONN., U. S. A.

Sales Offices: WILKES BARRE • CHARLOTTE • LOS ANGELES

now representing it on flow meters in the Cincinnati territory covering parts of Ohio, Indiana, and Kentucky. Mr. Chapman's office is in the Schmidt Building, Cincinnati.

Fletcher Works, Philadelphia, have elected Robert J. Bartholomew as president, succeeding Otto W. Schaum who becomes chairman of the board. Mr. Bartholomew has been with the firm since 1895, being chief engineer

Robert J. Bartholomew elected president of Fletcher Works

since 1915 and also secretary since 1933. Mr. Schaum has been president since the incorporation of the business in 1907. It was formerly Schaum & Uhlinger.

Hewitt Rubber Corp., Buffalo, N. Y., has appointed Benjamin T. Moffatt as manager of the New York District.

Hygrade Sylvania Corp., Salem, Mass., announces that the Hygrade Lamp Division has leased from the United Shoe Machinery Co., two buildings of the Ipswich Mills plant at Ipswich, Mass., containing 69,000 sq. ft. of floor space, for the manufacture of Hygrade Miralume fluorescent lighting units, formerly made at the Salem, Mass. plant.

Babcock & Wilcox Tube Co., Beaver Falls, Pa., has appointed Joe S. Thompson as district sales manager of the Chicago office. He has been with the company since 1934.

Link-Belt Co., Stoker Division, Chicago, announces the appointment of the Georgia Power Co., Atlanta, Ga., as a retail dealer in the sale of Link-Belt stokers in that territory.

Lincoln Arc Welding Foundation, Cleveland, Ohio, has set up 46 award divisions in its program providing $200,000 in awards for reports on outstanding uses of arc-welding in industry. Of particular interest to textile men are those divisions covering textile machinery, and maintenance of plant and equipment.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., reports that 1939 business grossed $214,239,044, a gain of 43% over 1938. Only 1937 and 1929 were better years in the company's records.

American Management Association, New York, will hold a contest for sales presentations at its annual marketing conference at Hotel Roosevelt, New York, April 24 and 25.

Givaudan-Delawanna, Inc., will remove their executive offices and service laboratories from 80 Fifth Ave. to 330 West 42nd St., New York, on May 20.

Reliance Electric & Engineering Co., Cleveland, Ohio, has elected James W. Corey as sales vice-president. Since 1932 he has been general sales manager. Mr. Corey joined Reliance in 1911.

Lustre Fibres Limited, selling agents for the American Viscose Corp., now at 200 Madison Avenue, New York, will move their sales offices on or about May 1 to the Empire State Building, 350 Fifth Avenue, New York, it is announced by W. B. Olmsted, general sales manager. A New York branch sales office has been established for the New York district, under J. H. Hammes, formerly assistant manager of the Viscose Process Division, assisted by R. N. Semler. A. C. Werner, manager of the Acetate Division, has been appointed to the newly created post of assistant general sales manager. The divisional personnel is now as follows: Viscose Process Division: W. D. Benson, manager, MacLean Williamson, assistant; Fibro Division: H. W. Rose, manager, W. N. Chace, assistant; Acetate Division: G. L. Storm, manager, J. C. Wilmerding, assistant; Vinyon Division: W. G. Luttge, manager.

Republic Steel Corp., Cleveland, Ohio, promotes safety and the use of steel by awarding steel plaques to various company divisions for their safety achievements. For this purpose Republic utilizes a new process of reproducing photographic images on stainless steel. The plaque shown above is made from 16-gauge Enduro stainless steel. The subject matter etched in the metal will retain its original clearness indefinitely.

Allis-Chalmers Co., Milwaukee, has appointed D. S. Kerr as manager of the company's Atlanta office. He has been with the company since 1922 and been manager of the Chattanooga office since 1930. As manager of the Atlanta office, he will have jurisdiction over both the Chattanooga and Knoxville offices.

D. S. Kerr, Atlanta manager for Allis-Chalmers

Steel Heddle Mfg. Co., Greenville, S. C., is constructing a new $15,000 addition adjoining the present structure as part of a general expansion program now underway, according to J. J. Kaufman, Jr., general manager.

Howard Bros. Mfg. Co., makers of Tufferized card clothing have appointed Charles A. Haynes as representative in the northern cotton field to succeed the late Arthur A. Moffitt.

U. S. Textile Machine Co., Scranton, Pa., has named A. L. Lewis, lately vice-president of Atwood Machine Co., as sales representative. His headquarters is Scranton, and, while in the South, Whitin Bldg., Charlotte.

Carter Traveler Co., Charlotte, N. C., is constructing a new building to permit doubling its capacity. Plant will be two stories, 75x100 ft. and will be ready for occupancy in May.

Elastic Stop Nut Corp., Elizabeth, N. J., has recently broken ground for a new plant on Vauxhall Road, Union, N. J., a suburb of Newark. The plant will be used solely for the manufacture of the corporation's extensive line of self-locking nuts.

Paramount Textile Machinery Co., Kankakee, Ill., has let contract to Hughes-Foulkrod Co., Philadelphia, Pa., for erection of a 5-story and basement addition to its plant from plans prepared by Lockwood Greene Engineers, Inc., New York.

ORIGIN OF SERVICE

Every year our own research laboratory has opened up new frontiers for our business. We have seen it as a department grow and develop in importance, touching on nearly every phase of our activities . . . until today it represents an insurance policy on the continued development of Sonoco Service.

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Readers interested in literature reviewed on this page may secure copies by writing to Textile World, 330 West 42nd St., New York, giving their company connection, title of item desired, and date of issue in which it was reviewed.

Corrugated Boxes. Hinde & Dauch Paper Co. Portfolio illustrates and describes outstanding accomplishments in present-day packaging; gives brief comments on type, size, design, and use.

Leather Belting. Alexander Brothers. Illustrated booklet describes company's leather link belt, pictures several of its applications, gives data on prices, etc.

Chemicals. Warwick Chemical Co. Technical data bulletin gives information on Hydrolux D, product for use in connection with vat and discharge printing.

Electrical Equipment. Westinghouse Electric & Mfg. Co. Booklet B-2211 contains 15 pages of installation photographs of electrical equipment of various types installed in woolen and worsted mills; also contains data on lighting units, switches, circuit breakers, etc.

V-Belt. Gates Rubber Co. February issue of *Industrial News* contains articles describing use of company's products in finishing plants and backing-cloth mills.

Wetting-Out Agents. E. F. Houghton & Co. February-March issue of *The Houghton Line* contains, in addition to other material, articles describing a variety of applications of company's wetting-out product known as N-25.

Capacitor Motors. General Electric Co. Bulletin GEA-2915A describes company's general-purpose capacitor motors for a variety of applications; Bulletin GEA-1184D covers a-c. magnetic motor starting switch; Bulletin GEA-3301 describes system for electrically controlling heated equipment, such as furnaces, boilers, etc.

Stainless-Steel Equipment. S. Blickman, Inc. 4-page folder describes and illustrates various types of stainless-steel equipment which this company fabricates for textile and processing industries.

Induction Motors. Reliance Electric & Engineering Co. Bulletin 118 pictures and describes manufacture of squirrel-cage induction motors for 2- and 3-phase a-c. circuits.

Projectors. Bausch & Lomb Optical Co. Catalog E-20 describes micro-projection equipment for throwing magnified images on screen, drawing board, or other similar surface.

Fluorescent Lamps. Incandescent Lamp Department, General Electric Co. 4-page Folder A gives essential technical data and prices on complete line of fluorescent lamps and auxiliary equipment.

Water Coolers. General Motors Sales Corp. Water-cooling equipment and methods for a variety of installations are the subject of this 12-page booklet covering Frigidaire equipment.

Belting. Chicago Belting Co. Condensed catalog describes various types of tension-welded leather belting and accessory equipment manufactured by this company.

Controls and Tachometers. Bristol Co. Catalog No. 4050 describes company's line of air-operated controllers for a variety of services; Bulletin 542 contains information about tachometers of various types.

Bearings. Bunting Brass & Bronze Co. Addition of many new sizes and types of bearings for a wide range of uses features catalog No. 40, which also contains latest prices on company's products.

Knitting Machinery. Wildman Mfg. Co. Illustrated folder contains photograph of company's Interlock machine, and actual sample of cloth knitted on it.

Gears. Brad Foote Gear Works. Catalog 110 contains 250 pages of engineering data, prices, etc. of stock gears, reducers, cogs, belts, sockets, bearings, pulleys, chains.

Cleansing Compound. Cowles Detergent Co. February-March issue of *Cowles Laundry Tips* contains glossary giving meaning of a large number of words and phrases used in connection with washing, scouring, bleaching, etc.

Mixers. Mixing Equipment Co., Inc. Three-page catalog covers nozzle-mounting, top-entering mixers for a wide variety of uses; included are diagrams and charts giving information on applications, methods of installation, dimensions, etc.

Switch Enclosures. Trumbull Electric Mfg. Co. Heavy-duty switches in semi-dust-tight, dust-tight, water-tight, rain-tight, and explosion-proof types, as well as a type for use in hazardous locations, are described in circular No. 315.

Fire Extinguishers. Pyrene Mfg. Co. 8-page folder gives information on company's Guardene type extinguishers, describing their use and advantages.

Hoists. Harnischfeger Corp. Bulletin H-13 tells how textile mills use company's hoists for speeding up production, increasing efficiency, and making work easier for employees.

Multiple V-Belt Drives. Allis-Chalmers Mfg. Co. Revised catalog section, No. 151, includes new horsepower ratings for multiple V-belt drives, and contains engineering information on selection of size of belts, speeds, etc.

Valves. Foxboro Co. Illustrated folder, DMF 789, describes company's Stabilflo Valves for use in process control; includes illustration of valve construction, and describes recent improvements.

Leather Belting. J. E. Rhoads & Sons. Illustrated, 4-page booklet contains facts about leather belting manufactured by this company, and brief case histories of a number of installations.

Meters. Brown Instrument Co. Folder 80-37 tells how to increase present boiler-room capacity through use of flow and CO_2 meters; Catalog 2203 covers complete line of mechanical flow meters, indicators, recorders, and controllers.

Corrosion-Resistant Chains. Link-Belt Co. Bulletin No. 1804 gives information on company's bronze drive and conveyor chains which resist the corrosive action of organic and inorganic acids; included is a chart showing suggested applications, cross-indexed by acid and operation.

Switches and Switchgear. Westinghouse Electric & Mfg. Co. Folder F-8524-A covers Type DA air circuit-breaker; booklet DD-36-116 describes in 28 pages applications of company's indoor disconnecting switches; catalog section 29-460 describes circuit-breaker panel boards designed particularly for use where air is filled with chemical or acid vapors.

Deaerating Heaters. Worthington Pump & Machinery Corp. Bulletin W-210-B24 describes vertical, double-element, deaerating heater; included are cross-sectional views showing various parts of the machine, and brief descriptions of each part.

Gate Valve. Lunkenheimer Co. 8-page circular shows complete line of valves with drain channels and bronze thread bushing in bonnet, models are available for use with steam, oil, gas air, water, and gasoline.

Bottom Stitcher. Ideal Stitcher & Mfg. Co. Machine for closing carton bottoms is pictured and described in 6-page folder; advantages of the equipment are pointed out, and a list of users, including several textile mills, published.

Flooring Compound. Flexrock Co. Illustrated leaflet describes products for surfacing and re-surfacing floors, points out inefficiency of broken floors, and ease of making repairs.

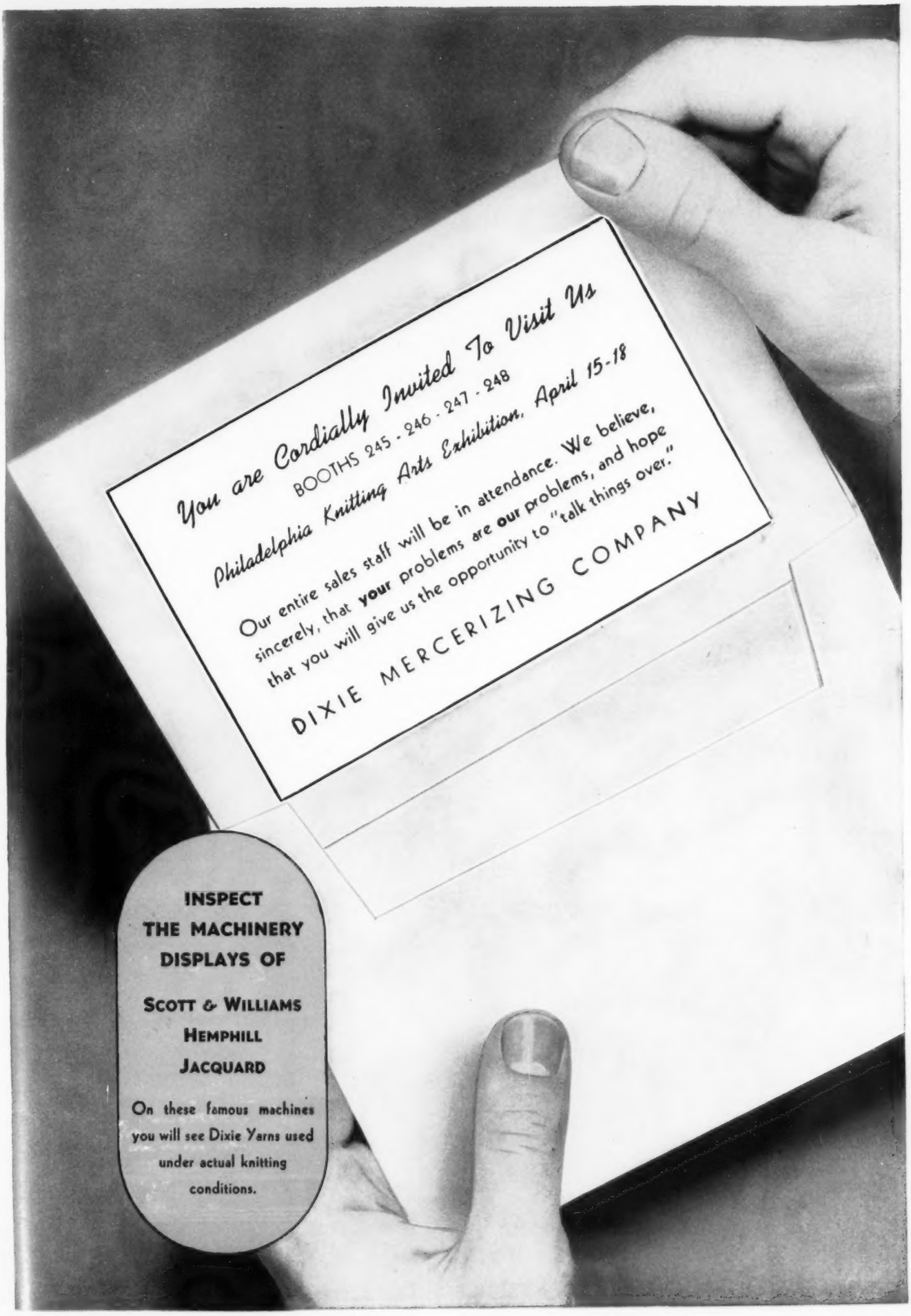
Vibration Control. Korfund Co. 8-page booklet discusses vibration control for concrete foundations; included are diagrams showing methods used, and several photographs of typical installations.

Steel Products. Scully Steel Product Co. 254-page loose-leaf stock list contains up-to-date information on company's line of steel products, hoists, boiler-room accessories, etc.

Instruments. Leeds & Northrup Co. Catalog E covers line of electrical measuring instruments for research and testing in laboratory, plant, and field; illustrates and describes briefly a wide variety of instruments manufactured by this company.

Window Shades. Hough Shade Corp. Advantages of window shades for manufacturing plants and offices are pictured and described in a 4-page folder, which also includes installation diagrams and data.

Fans and Blowers. Hartzell Propeller Fan Co. Catalog No. 12 describes and illustrates line of propeller-type fans and blowers, and gives complete air-delivery tables on each of them.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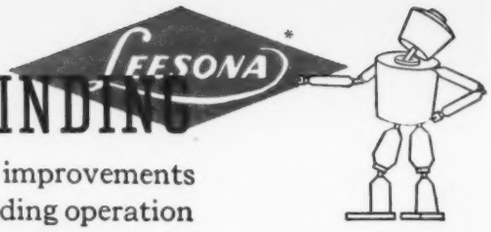
On these famous machines you will see Dixie Yarns used under actual knitting conditions.

THIS IS NO. 20 OF A SERIES ON

GETTING THE MOST FROM WINDING



Information about winding designed to show improvements in winding equipment and new ideas in the winding operation

POSITIONING OF YARN ON PACKAGE (No. 50 Winder)

When winding yarn on tubes, it is desirable to have the yarn located centrally on the tube, with the paper core extending out an equal amount on both ends. When winding on cones it is desirable to leave at least $\frac{1}{4}$" of the base of the paper cone extending beyond the winding point; it is also important not to wind on burnished or lacquered tip.

Latest design of one-piece Traverse Rod showing 24 threads per inch where Rod contacts Traverse Slide.

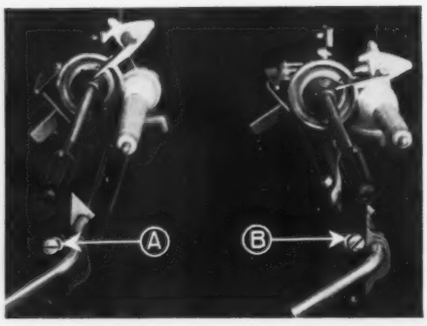
Positioning of the Thread Guide for the above purposes is accomplished easily on the No. 50 Winder. The Traverse Rod is screwed into the Traverse Slide, and turning the Rod in the Slide will change the position of the Thread Guide in respect to the bare container. There are 24 threads to the inch, so each revolution of the rod moves the Thread Guide 1/24th of an inch (.042") and three turns move it $\frac{1}{8}$ of an inch. A full revolution is required, since the Guide fits into a slot at the outer end of the Rod.

When installing new machines or when overhauling old ones, this adjustment can be made quickly. There is no need to change the position of the cam on the shaft.

PARALLEL-SIDED BOBBINS (No. 90 Winder)

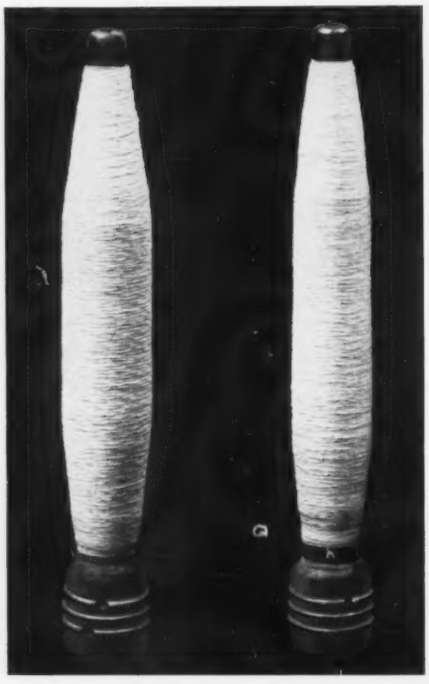
The No. 90 Winder is designed to build parallel-sided bobbins. With the Bobbin Attachment, which is used when winding onto cone base bobbins, the Traverse Bar is in one piece and is not adjustable. All bobbins produced with this attachment will be parallel-sided.

The Pin Cop Attachment is used for winding onto straight-sided bobbins and paper tubes, and in this case the Traverse Bar is in two pieces because of the necessity of using the Cop Former. The bobbins produced may not be parallel-sided, so there is an adjustment permitting the front end of the Traverse Bar to be moved right or left. Some mills do not take advantage of this



adjustment or purposely leave it out of adjustment, building bobbins which taper toward one end.

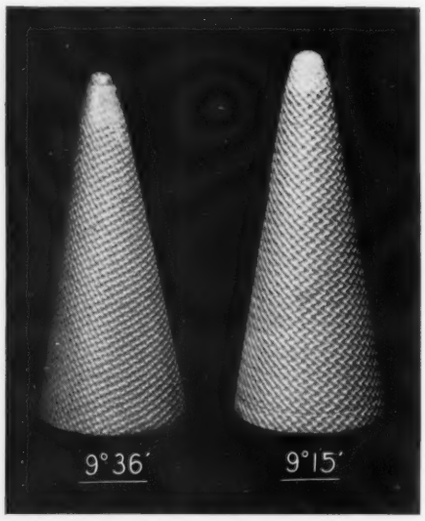
The illustration below shows two bobbins produced on the same spindle, but with different setting of the Traverse Bar Support Bracket. The bobbin on the left is the correct shape — it holds much more yarn and will run for a longer time in the shuttle.



The bobbin on the right was produced with the setting shown at A. The sides are tapered toward the tip end, which reduces the amount of yarn on the bobbin. Also, when removing this bobbin from the spindle, the greater diameter at the base of the bobbin may cause it to bind against the Traverse Wheel.

9°36′ AND 9°15′ TAPER CONES (Roto-Coner and No. 50 Winder)

Our service men have reported a few cases of mills having trouble on the No. 50 Winder and Roto-Coner due to mixed sizes of paper cones.



The illustration shows (left) the 9°36′ taper cone which is used on the Roto-Coner and all types of drum winders producing "open-wound" cones of cotton knitting yarn. The cone on the right has a taper of 9°15′ and is used principally for precision-wound cones of ply yarns, thread, etc.

The 9°36′ taper cone is $6\frac{11}{16}$" long; the 9°15′ taper cone is 7" or $\frac{5}{16}$" longer.

The inside diameter at the base of the 9°36′ cone is $2\frac{17}{32}$". The 9°15′ cone has an inside base diameter of $2\frac{39}{64}$", which is $\frac{5}{64}$" wider.

It will be seen immediately that there is enough difference between the two cones so they must be used with the proper cone holder, to get satisfactory winding results.

Special gauge used by manufacturer for checking 9°15′ cones. 9°36′ taper cones do not fit. Length should come within tolerance indicated by undercut section.

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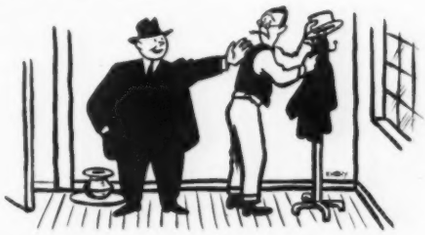
THE OVERSEERS' CORNER

A PETE AND BILL DISCUSSION

TECHNICAL MEETINGS



Bill was reaching for his hat. . . .

Bill was reaching for his hat late one Friday afternoon to knock off for the week-end when Pete waylaid laid him. "Are you all set for the meeting tomorrow?" he asked. "Got room in my car to take you along."

"What meeting?" asked Bill. "The only meeting I'm going to tomorrow is down where the fish bite."

"You mean to tell me you don't know the Exalted Order of Overseers is having its spring technical meeting over at Millville? I haven't missed a meeting in years. Always get some good ideas from the other fellows about running my job. Gives me a chance to shake hands with some of my old friends too. I wouldn't miss it."

"Nuts to those hot air parties," grumbled Bill as they strolled out the door. "I learn more from going fishing than from those self-appointed experts. They can't tell me anything I don't know, and besides if they know anything good or new they keep it to themselves. It's a waste of time. Nobody ever says anything except a few guys who like to hear themselves talk. The fellows who really know their stuff keep their mouths shut."

"No wonder you're such an old fool, Bill. Anybody with prehistoric ideas like that ought to be under six feet of dirt. The men who attend those meetings are the most intelligent in the industry, and nearly all of them are glad to share their knowledge with others. I believe 90% of them will gladly answer any question you might ask."

"That's right," sneered Bill biting savagely at the plug of tobacco he had extracted from his cavernous pockets. "They'll answer any question you ask as long as it's not too personal."

"Okay, Bill, if you feel that way. You're just the sort who impedes the world's progress anyway. If every one was like you we'd have no interchange of ideas, probably no electricity, automobiles, radios—"

"That's enough, Pete. If you don't stop that oration I'll have to go to the meeting to get a little peace and quiet. But I still prefer to listen to fish music down at the lake."

Are organized technical discussions worthwhile for the overseer?

Letters From Readers

The Church Social

"The Foreman's Wife"
Pete & Bill, Feb. 1940

Editor, Overseers' Corner:

It seems that some chronic complainers think that the overseers and their families are little tin gods, and their sociability should be held within the four walls of their homes insofar as concerns those people who work for the overseers. But this type of prudery doesn't ring so very true in the majority of cases. The overseers' wives and children taking part in these socials, whether the church, club or other types, seems to me to only show that they are human rather than self-made aristocrats, with perhaps a turned-up nose and a doubly-stuffed shirt. And in most cases the overseers are men who came up from the ranks and were once workers too. Pete and his wife really show what a Christian spirit means to them. And in most every instance fellow churchgoers will appreciate those of the upper brackets lending their presence. Being a snob doesn't inflate the opinion of a man in the eyes of a fellow worker; and being present at a social doesn't indicate an intended spirit of noseyness. Eh, Pete?

F. L. Byrd (*Fort Mill, S. C.*)

Friendliness Stabilized Labor

"The Foreman's Wife"
Pete & Bill, Feb. 1940

Editor, Overseers' Corner:

I am surprised as well as disgusted at Bill's attitude toward community activities as discussed by him and Pete in February Textile World. Evidently he must be attempting to turn the clock back or else he has not been a very close observer the last few years. The greater interest the foremen and even the executives of a company take in the activities of their employees, the greater will be the loyalty of the employees to the company. It might be noted that in some mills even where the wages are unusually high, labor organizers got a strangle hold because

CONTRIBUTIONS to the letters and practical helps in "The Overseers' Corner" are paid for when published without regard to length. We use letters (not over 200 words) discussing the material on this page or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute practical helps or kinks which are published (not over 500 words) will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. Contributions of greater than specified length may be given consideration as articles. If these pages interest you —contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York.

the management had never gone to the trouble to bind the employees to them by ties of friendship and good will. On the other hand, in some mills where the wages were much lower, these same organizers could not turn a wheel on account of the friendly attitude of the employees toward their employer. There is no earthly reason why both the foreman and his wife should not take an active part in the affairs of the community.

K.M.S. (*Virginia*)

Safety for Battery Fillers

The safe battery filler avoids injury on his job by doing the following:

1. He examines his machines when he starts to work to see that all guards are in place and everything working properly. He reports all things that need repair to his second hand.
2. He keeps his hands out of all moving machinery. He never reaches behind battery while loom is running or under battery for he knows his hand may get hit by the picker stick.
3. He never pulls the waste from a battery head to the right; it should be pulled forward to keep from getting his hand caught in the loom on the right.
4. He always notices the filling in shuttle to see if the loom is about to change filling before he turns battery backward to refill, for if the loom changes filling while he is turning battery back it will mash his hand.
5. If a loom throws the shuttle out he reports same and sees that the weaver has the loom fixed. He never stands near a loom where new work is being started, for he knows that the shuttle may fly out and hit him.
6. In getting filling out of quill cans, he is extra careful if the can has sharp edges. He places cans back in their proper position when he gets filling out of same. He reports all bad filling and bad quill cans to his second hand.
7. If loom has individual drive motor, he checks to see that wires to same do not have broken insulation and that ground wire is in place.
8. If he drops quills, bobbins or filling on the floor, or if he sees any other objects on the floor, he picks them up.
9. Before he starts up loom, he looks to see if anyone is working on same.
10. When breaking off tailings, he does not pull with such force that his hand will strike lay of adjoining loom. He does not grab for falling filling.
11. If his hands blister easily, he tapes his fingers before he starts filling batteries to prevent possible infections.
12. He does not ride elevators unless instructed to do so, and he keeps his hands off gates and does not lean against them.
13. He watches out for splinters on boxes and floors.
14. He never operates a machine or does any other job besides his own unless he is instructed to by the proper authority.
15. He avoids running up or down stairs.
16. He does not carry an open knife or hook or scissors in his pocket—he carries them in a sheath.
17. He avoids hurrying and he keeps his mind on his work.

—National Safety Council.

Overseers' Practical Helps

Handy Quill-Can Gadgets

Handling of quill cans by quill boys can be made faster and easier by adding four ball-bearing rollers mounted on a light frame-work, and a bit of tin formed into a funnel-like shape, as shown in accompanying photograph. The framework should be such that it can be clamped about the bottom of a drawing can, and the funnel of a size that will slip into the top of the can.

With such a can, the quill boy can easily pass average-sized weavers as he goes down the weave-alley. In addition, the rollers will put an end to cans with bottoms worn out. And the wide funnel top will prevent quills from dropping on to the floor.

Such a can is also very useful for handling small lots of filling, collecting junk from about loomfixers' benches, and other similar purposes.

—J. C. Norman (*Alabama*)

Simple gadgets which add to quill can's usefulness

Sprinklers Valuable in Wool Dryers

The value of automatic sprinklers in wool dryers is brought out by a recent analysis by the Associated Factory Mutual Fire Insurance Co. Of 31 fires in wool dryers reported over a 12-year period, 18 occurred in sprinklered dryers with average damage of only $190, whereas 13 in unsprinklered dryers caused damage averaging $690. The only three fires exceeding $1,000 damage were in unsprinklered dryers.

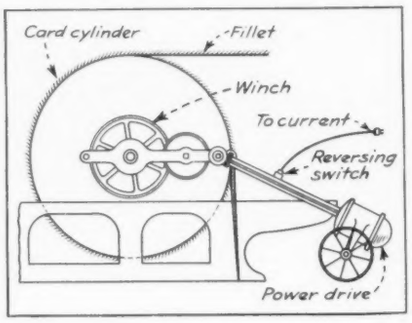
Most of the fires involved scoured wool, which burns much more freely than grease wool. Spontaneous ignition of waste, dyed wool, and dirt in dryers and ducts accounted for fifteen of the fires, the remainder being due to friction or sparks, hot steam pipes, hot bearings, and other causes.

In addition to automatic sprinklers in dryers, manually controlled open sprinklers or steam jets in ducts are also desirable.

The insurance company's analysis also showed the importance of keeping dryers and ducts clean. Bearings of conveyors and blowers should preferably be located outside the dryers, where they can be inspected and maintained.

Power Drive Aids Clothing of Cards

Our mill is always conscious of machine stoppages in the card room, because we realize that the production is made in that department. One of the reasons for stoppages is the re-winding of card clothing, or the winding of new fillet. Our method was to use a hand



Power drive replaces manual labor in winding card clothing

winch to revolve the card cylinder. This necessitated at least two or three extra men, who, whenever needed, were taken from the labor gang to the card room. We eliminated this extra labor by attaching a portable, reversible power drive to the winch. The attached sketch illustrates the set-up.

Several advantages were obtained, namely: Tension is more uniform, and if a fillet tension machine is also used, tension of the clothing is held perfectly. Surface speed during winding is constant.

A jerky motion on the winch (which often occurs with manual operation) is very harmful. The labor saving is obvious. We were able to release two men to more important work. Time is also saved, because the operation is continuous from start to finish; there being no rest needed due to physical fatigue.

—RICHARD M. DORIAN (*New Jersey*)

Not So Dumb

By J. E. BULLARD

PERHAPS BOB JONES was not really so dumb when he took charge of the Miller Mills as he seemed to be. He did lack the training the family had always given those destined to become general managers. In fact, about the only qualification he had was that he was the last remaining male of the family.

Fate works that way sometimes. David Miller was all prepared to step into the job when he was killed in that airplane accident. His younger and reckless brother, John was dead when they found him in his wrecked car after that last wild party he attended. A year later their father dropped dead in his office one afternoon.

It was a bitter pill for the proud old Miller family to swallow to place Bob in charge. Yet, in spite of the fact that his grandmother had run away and married Bob's actor grandfather, he still had Miller blood in his veins even though it was the inferior blood of a disinherited grandmother.

As a matter of fact, the feud between the two branches of the family had simmered down to a point where Bob had worked in the mill for a few years after the war. He was in line for a minor executive position. Never, however, was he considered as even the least candidate for general manager.

It may have been the war which made it hard to stand the confinement or it may have been the attitude his uncle and his cousins took toward him. Anyway, he decided to go into newspaper work and was doing very well in it.

When he was told at the family conference he would have to take charge he was cold to the proposition. The only way those nice, aristocratic ladies could persuade him was to give him full and complete charge free from any family interference.

From the first, he was a different kind of manager. He called in the superintendent, the foremen and so on, one by one. He had long, confidential talks with them, the tenor of which was the same.

"I didn't want to take this job," he explained. "I don't know any too much about it. But there are 500 people working in the mills, and if I didn't take over, all of these people might be thrown out of work. Many of them have worked here all their lives. Some would not find it easy to get anything else to do. Those who've bought homes might have to sacrifice 'em. My real job is to do all I can to help every one to have work to do."

Of course, nobody really believed Bob at the start. This was not the Miller way. The original Miller mill was one of the first in this country. There had always been a definite master and man relation. This attitude of Bob was not even plausible.

"The function of present day management," Bob explained, "is providing employment and producing goods at the highest wages and the lowest possible cost toward the end that standards of living may be raised to the highest level rather than making fortunes for a few individuals."

Of course the family went right up into the air. They had no idea he was so radical. However, they could not break the contract they had with him. A peculiar thing, too, was that the mill began to show more and more profit under Bob's management.

No employee had any difficulty getting into Bob's office to talk things over, whether he was a floor sweeper, an executive or even a member of the family. Bob, however, never acted over the head of anybody. He called a conference.

The depression got under way and there was not so much business as there had been. It looked as though it would be necessary to lay off a good many for a considerable length of time.

Bob called a conference of all the executives of the company. He told them it was a case of cutting costs to reduce selling prices or of closing the mill. He suggested they get to-

"No employee had any difficulty getting into Bob's office to talk things over, whether he was a floor sweeper, an executive, or even a member of the family."

gether, examine the problem from every angle, and bring in suggestions.

A few days later a committee of wage earners came to Bob with a wage-cut suggestion. He told the committee he appreciated what had been done but disliked to accept the suggestion. Seeing no way out, he finally introduced the cut but promised wages would go back to normal as soon as possible.

Of course, by now, everybody in the plant had come to believe Bob was sincere. The family put up with him, but felt he showed his grandmother's blood when he got in the habit of having parties for the mill help at his summer place.

During recent years most of the companies in Bob's industry have been having a lot of labor trouble. Part of the time they could not tell what union to deal with. The rest of the time it seemed labor agitators were determined to make all possible trouble. They started to make trouble for Bob. Just how much rough stuff was pulled nobody will ever know. It is a fact, though, that every vote taken has been against the union asking for the vote, and there have been no strikes.

Studying the balance sheets of these last few years indicates that Bob was not so dumb as he seemed when he decided on his course of action. Possibly what he learned about human nature from his newspaper work helped. It may have been the old feud between the two branches of the family that made him act the way he did. Anyhow, the mill is doing well; his aunts and cousins are getting more out of it than at any other time since the end of the last war-born boom. Everybody seems reasonably happy.

Matching Shades In Woolens

Requires teamwork by designing, dyeing, mixing, and finishing departments

By A. WARD FRANCE
Philadelphia Textile School

IT IS SELDOM that different batches of wool dyed by the same formula match exactly. Still, producing yarns and fabrics which match from order to order is one of the primary tasks of woolen mills. The dyer should not be expected to do the impossible. But there are certain responsibilities which rest with him, and he should not try to dodge them. He should seek to do his job the best way, whether or not that is necessarily the easiest way.

In one instance, all the kettles in a dyehouse were working on stock for a large order. This was being dyed to a color that had to match exactly. For matching purposes, a small felted pad was made of a sample from each kettle. The shade was then inspected by the superintendent, who insisted that each kettle match the standard perfectly.

The pads from the individual kettles seemed to match each other too perfectly, and the superintendent's suspicions were aroused. On investigation, it was found that samples from all the kettles were blended together, and then a number of pads made from this blend, one to represent each kettle. The dyer was trying to get around a difficult situation the easiest way, by averaging all the kettles of the shade. The result of this subterfuge was that neither he nor the superintendent had any real idea of how close the various kettles were coming, and any yarns and fabrics which accurately matched the standard were the result of good fortune rather than good management.

If mixing of stock from a number of kettles of the same shade seems desirable or necessary, the entire contents of the kettles should be mixed, not just enough to make color pads. The way to do this is to take small amounts from each kettle in rotation, as the stock is fed to the dryer. This naturally helps to make a more uniformly dyed lot. Of course, the method is only applicable when there are large orders for one shade.

While it is difficult to do, the best procedure is to dye the whole order, matching each lot as closely as possible, and make a blend by spreading each dyed lot in layers over the pile, much as is done in the picker room. Then as the stock is needed, it is cut vertically, run through the picker, oiled and sent to the card room.

The situation is a little different in the fancy trade. Here, probably, only one kettle of a shade is needed for an order. It is necessary in this case to have someone in addition to the dyer check the shade. This is no reflection on the dyer, but merely an added precaution. As a matter of fact, the color may change enough after sampling to throw off the shade of the picked batch. When this occurs, it is better to dye another kettle to balance the first, since it never helps wool to redye it. This may not be practical, if only a small amount of that shade is to be used during a season.

In order to check fancy color batches, it is the custom of some mills to have the picker room make a trial color pad from the kettles they are going to use from that batch. This is then checked with the original before picking. Weighing of the colors on the grain scale must be done carefully, so that the felted pad will accurately represent the batch to be picked. In order to make doubly sure that both colors and picking are correct, the first roving made on the card should likewise be made into a felted pad and checked with the standard. There is then still time to correct the batch, if necessary, before the yarn is made.

The above is the usual procedure when the dyer is a good color matcher. When this is not the case, the whole picture changes. The skill then passes from the dyer to the color or pad matcher. Instead of just checking kettles, it becomes necessary to make a new color blend for every batch of the same shade. It may be necessary to add a darker shade of brown, a touch of brighter red, a different shade of green, or whatever is necessary to match the standard. It is far cheaper to make several pads than to discard a lot of yarn. This may seem like a ridiculous procedure to mills with a good dyer, but the writer has on occasion had to do this to make deliveries that were acceptable. The answer to such a situation may be to change dyers, but the salary scale often complicates this.

It is important that someone beside the dyer be responsible for the shade blended in the picker room. The sooner a mistake or off-shade is caught, the easier it is to correct. Usually, the designer passes on trial color-blend pads. If a correction is necessary, he should be the one to make it, as the original was probably made by him.

THE BEST METHOD of correcting an off-shade batch, which has gotten as far as through the pickers, is to increase the size of the batch so that the color causing the wrong shade becomes a smaller per cent to the new batch. For example, a 1,000 lb. batch is made up as follows:

10%	white	100 lb.
30%	slate	300 lb.
60%	black	600 lb.
100%		1,000 lb.

It is found by trial color pads that the slate should be reduced and 10%

of blue added. Since the amount of slate (300 lb.) is not to be increased, and since the slate is to represent 20% of the new batch, it is easy to ascertain that the new batch will total 1,500 lb. The new percentages and weights become:

10% white	150 lb.	(50 lb. added)
20% slate	300 lb.	(no addition)
10% blue	150 lb.	(150 lb. added)
60% black	900 lb.	(300 lb. added)

The stocks to be added are laid in a mix, run through a picker, and oiled. Then the old and new batches are again made into layers, run through a picker, and sent to the card room without further oil.

In the weave shed also it is desirable to have someone check on colors. Each warp, when it is started up, should be compared with a sample of grease cloth taken from the first sample end. Then, if any discrepancy exists, it can be found before the whole warp is woven out.

In finishing, colors may change if there is too much heat in the fulling mill, too much alkali in the soap, etc. Carbonizing also changes certain colors. However, a thorough check should be made of any off-shades noticed in the finishing department, since the trouble may go back to the dyeing of the raw stock. At one time the writer's attention was called to the fact that the colors of a sample blanket had changed from the original during the finishing. The cloth contained shoddy, which had been purchased in colors, and the trouble was blamed on the color bleeding from the shoddy. The amount of alkali in the fulling soap was reduced, and this took care of most of the trouble. But later it was found that some shades had been dyed with acid colors, instead of the chrome colors specified, because the former were easier to match. As these colors would not stand fulling, the real trouble was not in finishing but in dyeing. The substitution was the more serious because the defect could not be checked at the picker room.

Uniformity of Cotton Yarns

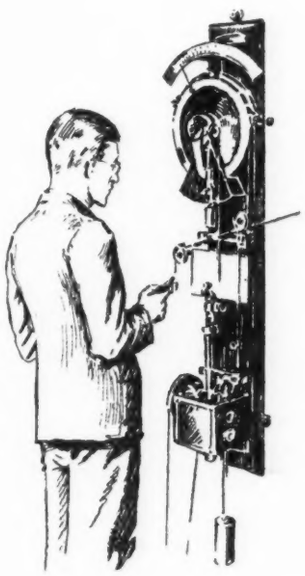
Depends on careful, frequent testing at each step in processing

By ROBERT BURGESS

EACH OPERATION in cotton-yarn manufacture plays a definite part in the making of the finished product. To insure attainment of desired results, the product of each operation should be tested at frequent intervals. These tests should be used to determine just what qualities the product of a given operation possesses, and to check up on the qualities of the product of the preceding operation. The tests will also indicate any necessary revision of calculations.

Unless careful thought is given to the matter, the importance of testing, especially during the early operations, may be underestimated. This is because, during these operations, the product is being handled in bulk, and, for that reason, it is usual to think of it in terms of bigness or roughness. In reality, it should be thought of as needing the same careful treatment as the finished product, as it is the beginning of just that.

Conditions which prevail during the opening and cleaning operations have direct effect on all operations which follow. During opening and cleaning, maintenance of uniform atmospheric conditions is of importance. Yet this



may not be accorded the attention it deserves, since in these operations the stock in process does not give visible indication, by running poorly, when conditions of temperature and humidity vary from the correct ones. Atmospheric conditions similar to those which meet the requirements of the carding department will probably be found suitable.

Testing of laps from finisher pickers usually is done on the basis of pounds to the lap. When changes are made in the picking department, several 1-yd. lengths are generally tested. A more thorough check could be made by making a test of the product on the lap; i.e., the card sliver. While this may take a little more time, it will give a result that will show the yard-to-yard condition of the lap.

It is common practice to make frequent weighings at the last drawing process, a point at which the cumulative effect of all the earlier operations is felt. Here uniform atmospheric conditions will show their value. In making the tests, the continuous length average is what one is interested in. The test should include enough of the sliver to make sure the sample is representative. For instance, with two-process drawing, 1 yd. of the finished drawing represents but 1 in. of each of the original card slivers from which it was made. This will not give much information about the card sliver.

Weighings should be made of selected roving, and also of rovings chosen at random. Roving for the random weighings should be taken from different frames each day.

As regards the finished yarn, a daily testing is considered satisfactory. Yet, this should be so arranged that it will give an accurate representation of the actual conditions.

To make test results of value, there should be a record of the atmospheric conditions during the time in which the slivers, rovings, and yarns were being made.

One may have the idea that, if tests are conducted frequently during earlier operations, there should be little or no necessity for tests during later steps in manufacture. This might possibly work satisfactorily in a mill in which the product is the same day after day. However, where frequent changes are being made, it is an easy method for error to creep in; to guard against this, frequent testing at all stages is essential.

There are also other tests which are likely to prove informative. One is to make a record, from time to time, of the number of ends down on a stated number of frames during a given period. Whenever possible, the cause of the breakage should also be recorded. Another advantageous check is to make a comparison between the regular weekly reports of yarn produced, and the actual weight of the finished product shipped (this with inventory adjustments) during comparable three- or six-month periods.

QUESTIONS & ANSWERS

Cleaning Dirty Reeds

Technical Editor:

In connection with our weaving of rayon fabrics, we are having trouble with dirty-reed marks. We clean our reeds with a brush and cloth every time we take a cut off, but still, when the loom has run for about three or four hours, the reed is as dirty as ever, and seems to contain an oily substance for which we cannot account. We use these reeds, which are made of steel, for weaving other fabrics as well; except when on rayon, they stay clean and never require attention. We shall appreciate any information that will lead to the remedying of this trouble. (8672)

A reed-brushing machine installed in the twisting department would probably pay for itself in a short time, and a machine-brushed reed far surpasses one that is hand-brushed. Of course, such a machine is made use of only on newly twisted or entered warps. However, it frequently takes only an hour or so to change a reed on newly twisted warps, and time so spent helps greatly in eliminating dirty streaks, reed marks, ends breaking due to sharp reeds, etc.

One of the best ways to control dirty-reed marks at the loom is to wash reeds with benzine, naphtha, clear gasoline, or other suitable cleaning fluid, at each cut-off. Supply each weaver with a pint jar and a sponge (not a brush or cloth). The weaver makes the cut-mark in the end of the piece, then washes the reed, after which the cut-mark is placed in for the new piece.

In washing, the sponge is rubbed from side to side in back and front of the reed as near as possible to the top so the cleaning fluid will seep into the spaces between reed wires. As the loom is started in operation, the dirt is washed out into the cloth for half an inch or so.

As another suggestion, how about your harnesses? Have they been cleaned to remove grease and dirt accumulated from fabrics woven before the change to rayons? Many dirty streaks are made when warp ends contact dirty heddles, due to a high shed.

Cotton Fabric Shows Filling Streaks

Technical Editor:

Will you please examine the inclosed pieces of cotton fabric, and advise me what causes the filling streaks. (8709)

The filling streaks in the fabric submitted, which was made with slub filling, probably originated at the spinning frame. The filling in these streaks is heavier, harder twisted, and the slubs are larger, than in the balance of the cloth.

Frequently, when double roving is used to make slub yarn, one strand of roving will break and lap over into the next strand, thereby causing a doubling that produces a heavier and harder twisted yarn, inasmuch as the same amount of twist is being put into the heavier strand. Then the spinner comes along, sees the doubling, and breaks it back at the rolls, but fails to break down the end and pull the doubled yarn off the filling bobbin. The harder twisted yarn in the doubling causes the picks to stand apart more than the regular picks and consequently makes the streaks more pronounced.

Some mills have eliminated trouble of this character by using single roving to make their slub yarns.

Belt Drives for Cards

Technical Editor:

Can you help us with a problem we are having in our card room, with belts driving the cards instead of the conventional way of running lines of shafting above each card in tandem formation? Can we run one extra line of shafting down the center to drive both the breaker and the finisher? This makes a better appearing card room.

Why do most cards have a twisted belt, which naturally consumes more power, instead of a straight belt? It might necessitate a larger diameter for driving pulleys and maybe a larger face, but would it not save power, as well as the expense of removing and replacing belts? (8597)

It is difficult to get an exact idea of what you wish to do, since the language is rather non-technical. The conventional method of driving cards, both worsted and woolen, is by running a line of shafting at right angles to the center line of the cards, driving the first breaker by a crossed (not twisted) belt. A similar line of shafting drives the finisher, which in turn drives back to the second breaker with an open belt. This arrangement is shown in Fig. 1. If there are a number of sets of cards set in a row, the lines of shafting would extend across the row.

Perhaps by "running a line of shafting down the center to drive both the breaker and finisher" you mean an arrangement as shown in Fig. 2. The principal objection to this is that it brings the main driving belts over the passage between the breaker and finisher, and there would be a great possibility of the heads or other parts of the operators striking the belts. It has a considerable danger hazard connected with it.

One reason for using crossed belts is to get more arc of contact of the belts on the pulleys. Cards are notoriously

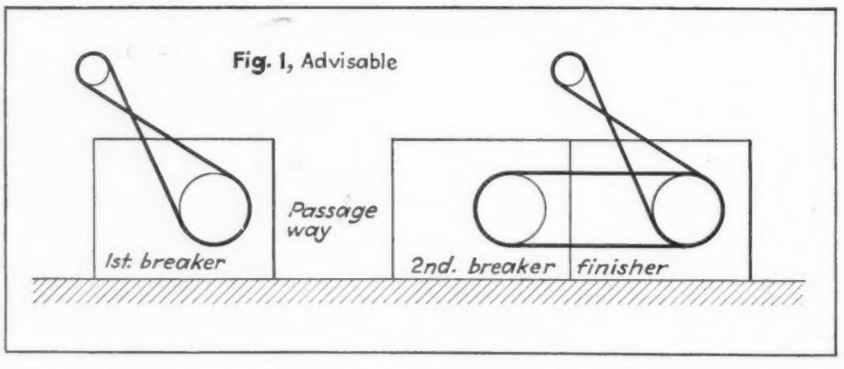


Fig. 1, Advisable

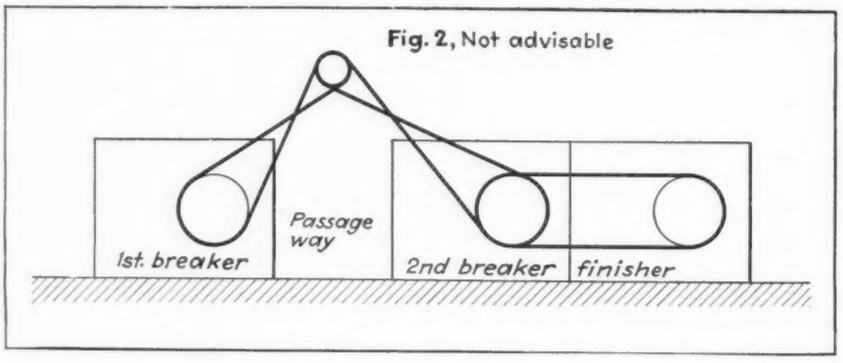


Fig. 2, Not advisable

hard to start, due to the inertia of the heavy cylinders, and the belts need all the pulley contact they can get. Due to the large reduction in speed, the shaft pulleys are relatively small, and thus the traction leverage is low. Another point gained by crossing a belt is that as the two inner surfaces of the belt pass at the cross they rub slightly and thus automatically clean themselves of the flyings that are so prevalent in card rooms, and which if allowed to collect on the belt surface, cause bad slippage. In one large mill, main driving belts on cards are all crossed, and, where some of the cylinder-to-cylinder belts are open, it is necessary to rig up some device continuously to clean the inner surfaces of flyings, in order to prevent excessive slippage. Many engineers believe crossed belts in the card room result in saving in power, increased production, and less maintenance.

Full-Fashioned Fixers

Technical Editor:

We wonder if you have any data on the number of competent fixers required in a full-fashioned hosiery mill making quality merchandise, figured on a basis of so many machines per fixer. We know of course that this would vary according to the class of machines and grade of merchandise made, but we believe an average figure could be given that could be used as a guide. We might say in this connection that we have a reconditioning program under way at all times, which we handle with our own fixers and usually have some new special styles in operation, which take up almost the whole time of one man as well. (8708).

There are so many variables involved in fixing full-fashioned hosiery machines that it is impossible to give you a figure which would be of use as to the average number of machines per fixer. Some of these variables are: New mills are likely to settle for quite a long period, and the uneven settling often disturbs the alignment of the long machines. Temperatures may vary widely, or be held very close by air conditioning. The machines may be worn by long use, particularly the friction rods and boxes. The machines may be running too fast, and the speed may be constant, or subject to wide variation. The knitters may be experienced, or otherwise. The knitters may build their pattern chains, and replace broken sinkers; or that work may be done by the fixers. The sinker heads and jack beds may be cleaned and reassembled by the fixers when they are not otherwise employed, or it may be done by helpers; and the reneedling may be done by the fixers, or elsewhere. Fixers may weld broken castings, and do machine-shop work, although it is more likely that this will be done at the machine shop. Single-unit and welt-turning machines are likely to require more of a fixer's time. Many of the late machines have protective devices to stop the machine when the slur-bar, pointex, or cradle sole mechanisms get out of place; but many more do not. Machines oiled with a pressure gun are better lubricated, and cause less bearing trouble than those oiled with an oil can. Some machines are accessible at their backs; the fixers must crawl behind others on their hands and knees. There is a great difference in the construction of the machines which have been built in the last ten years, the newer ones being much more complicated.

The above do not exhaust the list of variables, but are sufficient to show that the number of fixers needed in a specific mill might be far above or below the average for the industry. About the best which can be done is to make sure that the overseer has a good background of machine fixing experience, and let him decide on the number of fixers required and divide the work between them.

Cotton-Warp Melton

Technical Editor:

Inclosed is a sample of cotton-warp melton. Can you give us a layout for making this cloth? Our equipment consists of Whitin card, with tape condenser, ring-spinning; automatic W3 Crompton & Knowles looms; piece dyeing machine; fulling and cloth washing equipment; double-action napper; shearer; dryer; brush and press. We pull our own rags and buy cotton yarn for warp. (8542)

Warp yarn of the sample submitted is composed of 20/1 cotton, with a 1.40 typp (7/8 run, 4 2/3 cut) low-quality woolen filling. The finished yarn count is 56x28, and the finished weight is approximately 23 oz. per yd. The cloth is 56 in. in width.

A suitable construction to obtain these finished specifications would use a 10 reed with four ends per dent. The cloth should be set 80 in. wide in the loom and have 29 picks per inch: with a $\frac{2}{2}$ twill weave (sometimes in cloths of this nature a $\frac{2}{2}$ broken twill, often termed "Russian twill", is used).

Considering the fact that outside spinners supply your cotton yarns, and in the absence of any slashing or sizing machinery in your own plant, sized warps should be specified when ordering yarn; otherwise difficulty in weaving will be experienced. Width in loom, of course, varies according to the quality of filling and its shrinking properties. In this case, due to the very low quality used, the width of 80 in. should be sufficient.

You may experience some difficulty in obtaining a satisfactory roving, as coarse as you will require for the filling of this sample, from your tape condenser. Difficulty may also be experienced in spinning; some believe better low-quality yarns are produced by mule spinning. The remainder of your equipment appears to be quite suitable. (A finishing routine for this fabric will be described in an early issue.)

Streaky and Barry Cloth

Technical Editor:

I am submitting a fabric which is woven with a white warp and a black filling, and then has the warp dyed a deep rose color. We are experiencing light and heavy places in this fabric, as well as warp streaks. Your opinion as to the cause of these defects and methods of eliminating them will be greatly appreciated. (8673)

The warp streaks in this cloth are caused by uneven tension in the yarn. It appears the spools have what are called holes; that is, high and low sections caused by uneven spooling. This streaky effect might also be caused by uneven tension in the dressing—either uneven tension of the different spools, or spools of uneven yardage. As a matter of fact, this cloth is one on which extreme caution must be exercised during warp preparation.

The filling bars show that at the defect there are fewer picks per inch than in the other sections of the fabric. Either the loom let-offs are not working properly, or the looms are operating too fast, or it is poor weaving, or a combination of these. To suggest a remedy at long range is quite difficult, as the only cure is close supervision.

Correction

Charles S. Bicksler, Lancaster, Pa., has pointed out that Fig. C67 (Loom-fixers' Manual, Cotton Section, January, 1940, issue) contains an error. As drawn, the fork crank would be in vertical position and at the bottom of the fork hub when the fork was depressed, and this would tend to trap the fork. The drawing should have shown the fork crank in a position approximately midway between back center and top center when the knock-off is at the top of the cam. The length of the connecting rod should be so adjusted that the fork crank will move an equal distance above and below an imaginary horizontal line drawn through the center of the fork hub. The hub may then be turned on the fork crankshaft to obtain the proper angle of the wires.

LOOMFIXERS' MANUAL

COTTON SECTION—Chapter IX (Continued)

By IVAR MOBERG

Protector Motions

IN THE LAST INSTALLMENT reconditioning, setting, and adjustment of over-dagger protector motions was partially covered. The discussion continues below.

With the shuttle fully boxed, so adjust the dagger stop (Fig. C69, March issue, page 92) that there will not be over $\frac{1}{16}$ in. play between dagger and stop. Pick the shuttle into the opposite box and make sure there is a like amount of play between dagger and stop on that side of the loom. A piece of leather, put under the dagger stop so that the dagger will not directly strike the stop on every pick, reduces the shock and lessens wear resulting from the continuous hammering of dagger against stop.

Throw the shipper handle into "on" position and push the live frog back against the frog stop. Then, so adjust the knock-off dog on the frog that there will be no lost motion between dog and shipper handle. When the loom bangs off, the shipper handle must be knocked off as soon as possible, so that the power is off before the loom comes to a stop.

UNDER-DAGGER protector motions are illustrated in Fig. C70. To reset and readjust old protector motions of this type, first remove the knock-off-lever stands. If the loom has a steel breast beam, the parts marked *S* in the illustration are the ones to be removed; if it has a wooden breast beam, the parts marked *W* are the ones to be taken off. Now carefully check the knock-off lever assembly for wear, and replace any worn parts. On latest-type protector motions the knock-off levers are reversible, so that when they are worn they can be changed from right-hand to left-hand and vice versa. To remove these levers, release the pressure of the leaf springs by unscrewing the adjusting screw, and pressing on the tension roll. Insert a screwdriver in the hole in the bottom of the knock-off-lever stand, and pry the springs away from the hooked end of the knock-off levers. Then slide the knock-off lever out of the stand.

Apply a thin coat of light grease to all surfaces which contact each other, and might cause friction. Next, check the breast beam to make sure it is tight in its supports. Wooden breast beams, especially, have a tendency to work loose and even split, due to the strain of repeated bang-offs. If the breast beam is loose, the safety of protection is reduced and, oftentimes, when the protector motion functions the breast beam moves so far ahead that warp ends are broken, the shuttle split, or the reed damaged. A loose breast beam will also cause a thin stripe in the cloth every time the loom bangs off.

In addition, make certain the knock-off-lever stands are securely bolted to the loom sides and to the breast beam. On some types, knock-off-lever stands are bolted only to the breast beam.

Remove the entire protector-rod assembly and examine end and center bearings. Replace if badly worn. Check the rod for wear at the bearings, protector-rod springs, dagger tips. Replace worn parts, or build them up by welding. Dagger tips must be in good condition and of equal length.

Reinstall the protector-rod assembly, making sure the rod turns freely in its bearing, and that there is no end play. Apply tension of the protector-rod springs to hold the daggers up against the knock-off levers. Leave protector-rod fingers off and the protector-rod stop loose on the rod.

Now turn the loom until the tips of the daggers rest against the underside of the knock-off levers, just inside their edges. Hold the short-rod end up against the knock-off lever—the long-rod end being held up by the spring tension—and tighten the setscrew in the sleeve coupling. Ascertain that both dagger tips rest against the knock-off levers after the setscrews in the coupling have been tightened.

On some types, the protector rod is in one piece, and it may be necessary to twist the rod to bring both dagger points to rest on the knock-off lever. This is generally done with the rod in the loom, by slipping a piece of piping over each dagger and pulling the pipes in opposition. Mills using one-piece protector rods could to advantage cut off each protector rod as soon as it needs repair, using sleeve couplings for re-connection.

Turn the loom until the daggers rest in the V-shape grooves in the knock-off levers, and place the protector-rod fingers on the rod. Adjust the fingers so that they will rest against the binders of empty shuttle boxes. Check this position after the setscrews in the fingers have been tightened.

Readjust the tension of the two protector-rod springs. This must not be excessive, or it will cause the loom to bang off. Still, it must be sufficient to hold the protector-rod fingers in con-

Courtesy Crompton & Knowles Loom Works

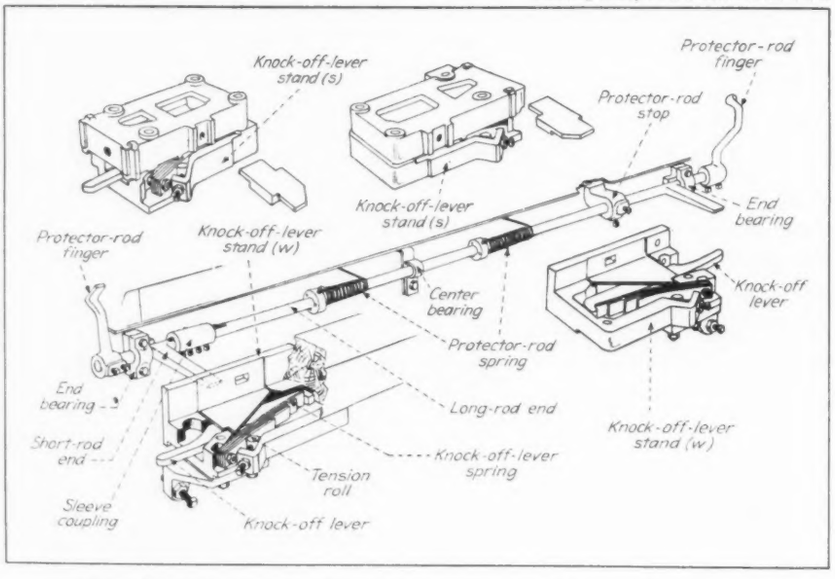


Fig. C70. Diagram of under-dagger protector-motion parts

tact with the binders at all times. Place a shuttle in the box and so set the protector-rod stop that it will prevent over activity of the protector rod without cramping the motion. Some looms have the dagger stop in an extension, with an adjusting screw on the end bearings.

With the shipper handle in "on" position, turn the adjusting screws in the brake handle, the shipper handle, or the knock-off connection, until the shipper handle just touches the knock-off levers. Lock the screws in this position. Move the loom against the protection and make sure the shipper handle is knocked off easily and promptly before the loom comes to a stop.

Adjust the tension of the knock-off-lever springs, by turning the adjusting screw against the tension roll. On looms with coil springs, the tension on the knock-off levers is adjusted by turning the spring collars. Proper tension is more or less a matter of judgment. A practical method is to adjust both springs to give equal tension, against which the loom can barely be forced by hand to knock off the shipper handle.

Now remove the shuttle, and turn the loom over until it has just passed the protection. At this point, start the motor and swiftly pull the shipper handle into "on" position. Be sure to let go of the shipper handle before the bang-off which will follow this start. Experience will enable a loomfixer to tell, by the shock at the bang-off, whether spring tension is correct or not.

Daggers should not touch any part of the loom during normal operation. They should either clear or strike the knock-off levers in unison.

CLOTH DEFECTS due to faulty protector-motion operation are rare, but invariably of major importance. There may be a serious smash of warp ends and/or filling. Torn cloth frequently results. Serious mechanical smashes can occur: these include smashed shuttles, broken temples, and/or a badly damaged reed. It is important that the protection be kept in correct adjustment at all times.

Note: See correction on page 97.

RAYON and SILK SECTION—Chapter IV (Continued)

By H. E. WENRICH

Driving and Shipping

AS A RESULT OF USE, the tumbler on the brake handle will in time become worn, and thus lose the leverage necessary to keep the brake-band free of the brake rim. This causes the band to become heated, and also retards loom speed. A new brake handle is therefore necessary.

Another source of brake trouble is slipping of the brake handle due to worn "humps" on the tumbler. This causes false loom stops. Although it makes a sloppy-looking section, some loomfixers tie harness pull-down springs on to the brake handles to keep them from slipping off and stopping the looms. The springs hold the handles back in place; but such fixing should be avoided. There are several methods of preventing slippage.

Brake rods running parallel with the breast beam, if bent, should be straightened. If the handles still slip off, and continue to do so after other adjustments have been tried, it becomes necessary to increase the hump on the tumbler, or on the brake lock-lever, depending on which of these the loom is equipped with.

Figure RS18 illustrates the tumbler type. The roller should fit snugly in the crescent *A* when the loom is stopped and the brake on. When the brake handle is pulled so that the hump slides over the roller to the *B* position, the brake is released. To prevent vibration stopping the loom, file the hump out so it is more pronounced on the *B* side. This can often be accomplished at the loom, without removing the brake handle, by using a small round file. In time, of course, the crescent may become worn down to such an extent that the handle must be removed in order to make a neat job possible. Metal can be removed from both points *A* and *B* without serious after-trouble.

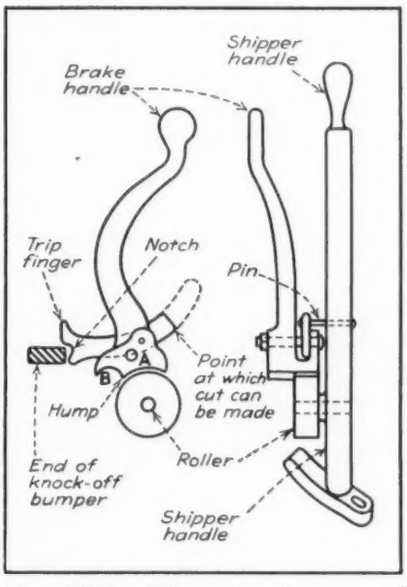


Fig. RS18. Schematic diagram of parts concerned with adjustments to brake and shipper motions

On looms equipped with brake lock-levers similar to that shown in Fig. RS16 (February issue, page 146), necessary filing and repairing can also be done at the loom without removing the castings.

Other causes of brake-handle slippage are faulty box swells and incorrect picking. If the swells are improperly shaped, they will allow the protector-rod daggers to nip the knock-off bumpers and jar the brake handles off, indirectly, through the trip fingers. When a shuttle is picked too quickly, the jar as it enters the shuttle box sometimes causes the protector rod to bounce, and allows the daggers to nip the knock-off bumpers. Nearly the same defect results when shuttles are picked late. A sharp ringing sound can often be heard when the daggers are striking or nipping the bumpers. Touching the knock-off bumper with the tip of one finger so as to feel the trouble the instant it occurs will make it possible to locate the box at fault.

The pin in the shipper handle keeps the trip finger in proper position. When the brake handle is back, the trip finger is up, but when the shipper handle is pulled to apply power to the loom, the trip finger is pulled back, by means of the pin, and falls into position. Occasionally, on looms which have filling detectors attached in front of the brake and shipper handles, trip fingers of the type shown in Fig. RS18 can be cut off along the dotted lines so as to prevent this unnecessary end from damaging the detectors. Trip fingers should fit so the notch fits over the knock-off bumper, with but very little play. If play is too great, the finger fails to function when the loom bangs off. If there is no clearance, the notch will fail to fall into proper place; this also prevents correct functioning.

The type of motion shown in Fig. RS16 has an adjustable bolt which can be lengthened or shortened to give the desired clearance, thus eliminating the trip fingers. Adjust this clearance so a slight amount of play is felt in the bumper when the loom is in running position. This same rule holds for other types of knock-off assemblies; wherever force is required, or adjustments press tightly, trouble will be experienced.

STAPLE COTTON FABRICS

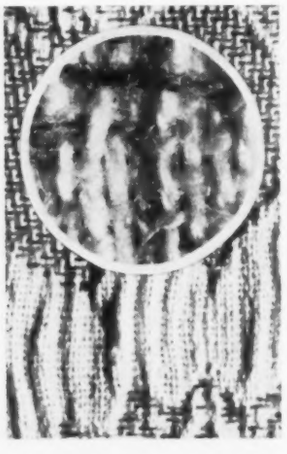
By JOHN HOYE

Fabric Technician with W. Harris Thurston, New York

Bedspread Fabrics

This fifty-first installment of Mr. Hoye's series of articles on staple cotton fabrics — which began in the January, 1936, issue—starts the discussion of bedspread fabrics.

Fabrics used for bedspreads include woven-design fabrics and embroidered or tufted-design fabrics. Chenille tufted bedspreads are among the most popular used today. Woven-design fabrics are generally jacquard-woven fabrics of unbleached and colored yarns or bleached white yarns, made with quilted or stitched, raised or flat designs. Originally several types of double-woven bedspread fabrics were made, which included mitcheline, marseilles, satin, crochet, and honeycomb. These either have been discontinued, or at least modified, because of newer fabrics, styles, etc. In general, bedspread fabrics used today are lighter in weight to reduce laundering costs. The term "woven-design spreads" is applied in the trade to a large group of fabrics, which may be flat or quilted. Other woven-design fabrics in use are crochet, satin type, marseilles type, plain or crinkle



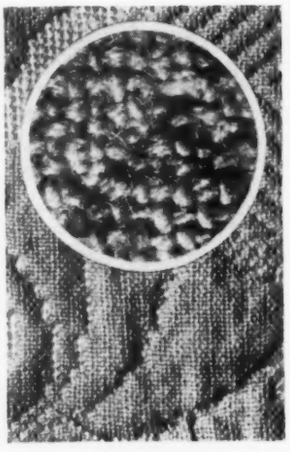
Jacquard-woven, solid-color, quilted-face, double-woven bedspread fabric, 90 in. 66 x 96, 0.62 yd.

dimity stripe, peasant type, and all-rayon or rayon-and-cotton damasks. The term "quilted spread" generally refers to a fabric which has a quilted or stitched effect formed by weaving only. The word quilt refers more particularly to a made-up or manufactured article, such as a patchwork quilt or comforter, in which a layer of cotton, wool, or feathers is used as a filling between two fabrics which are stitched together.

Jacquard Woven-Design Fabrics

With Quilted or Stitched Effects. In the best qualities of quilted fabrics, known as double-woven fabrics, two warps and two fillings are generally used. In places where the quilted effect is produced, two distinct and separate fabrics are formed, the top fabric having a characteristic quilted pattern, and the bottom fabric being flat. The warp used for the top fabric is woven slack. The warp used for the bottom fabric is woven with the usual tension. The slack warp ends (usually woven plain) crinkle, giving a definite quilted or stitched effect to the face fabric. The bottom fabric woven with regular tension warp ends is flat. In other places the two fabrics are woven or stitched together into one solid fabric. These double-woven fabrics may have reversible patterns; others are one-sided with twice as many ends (usually colored) on the face as on the back. Double-woven fabrics with flat designs are also made. Some of these have tapestry designs made with planted warp ends of several different colors which are brought to the surface where necessary for colored-design effects.

A stitched or quilted-face fabric is also formed by the use of two warps and one filling. One warp (usually unbleached) is woven slack; the other (colored ply warp) is woven with the usual tension. The slack warp and the filling are plain woven to form the face. The colored (tension) warp woven with long floats runs along the back, except where it is interlaced to form the pattern on the face. Between these interlacings of the tension-woven warp ends the face of the fabric crinkles and forms a quilted appearance. In the better-quality jacquard spreads the fabric is usually given a shrinking process during which it is loop dried. In this process the fabric is allowed to shrink in the width as much as possible. Also, as no tension is used in the loop drying method, there is very little lengthwise residual shrinkage. In



Jacquard-woven, quilted-face, double-warp bedspread fabric, 86 in., 56 x 44, 0.81 yd.

the cheaper qualities this shrinking process is omitted. Therefore, spreads made from these fabrics will shrink in both width and length during laundering. Yarns used in these jacquard fabrics are generally unbleached (ply) warp and filling yarns for the ground cloth, with colored ply warp for contrast and to develop the pattern. For solid-color effects, colored filling is also used. In the cheaper qualities singles yarns are used.

Yarns used in bedspread fabrics—*Warp yarns:* 10s to 22s singles, 8/2 to 30/2 plied, 150- and 300-den. rayon. *Filling yarns:* 8s to 18s singles; 8/2 to 22/2 plied; 3s, 4s, 6s, and 8s spiral; 300-den. rayon.

Examples of reversible, quilted, jacquard-woven, double bedspread fabric:

90 in. 72 x 80, 0.62 yd. (finished)—36 ends unbleached 2-ply warp and 36 ends colored 2-ply warp; 40 picks unbleached 2-ply filling and 40 picks colored 2-ply filling.

Example of solid-color, quilted-face, jacquard-woven double bedspread fabric:

90 in. 66 x 96, 0.62 yd. (finished)—44 ends 2-ply colored face warp and 22 ends unbleached singles back warp; 48 picks 2-ply colored filling and 48 picks unbleached singles filling.

Example of quilted-face, double-warp, jacquard-woven bedspread fabric:

86 in. 56 x 44, 0.81 yd.—28 ends slack-woven unbleached 2-ply warp and 28 ends tension-woven colored singles warp; 44 picks unbleached 2-ply filling.

NEWS OF THE MONTH

A.C.M.A.'s Big Show

The 44th annual convention of the American Cotton Manufacturers Association will be held at Greenbrier Hotel, White Sulphur Springs, W. Va., Apr. 25 to 27. W. M. McLaurine, secretary of the association, anticipates a record crowd at the meeting as already 500 reservations have been made.

The general theme for the meeting is "American Business." Three speakers at the Friday morning session (Apr. 26) will develop that theme: K. P. Lewis of Durham, N. C., president of the association; R. M. Hanes of Winston-Salem, N. C., president of American Bankers Association; and Dr. Virgil Jordan of New York, president of the National Industrial Conference Board, Inc. As usual, J. D. Sandridge and J. E. Moore of Charlotte will be in charge of the golf and skeet matches respectively on Friday afternoon.

The banquet Friday night will be the high spot in the entertainment. Saturday morning will be turned over to chairmen of the various association committees who will make their annual reports.

The Board of Governors' conference will be held on Thursday morning, April 25, at 10 o'clock.

Annual Wage Plan Adopted by Several Mills

The Wage-Hour Division announces, with apparent pleasure, that four companies, three of them in textiles, have adopted the annual wage plan, which practically excuses them from the statutory hours provisions of the Wage-Hour law.

Some Division officials feel that the action of these firms sets a precedent which may be extensively followed by others in industry.

The three textile companies are Greenville Finishing Co., Smithfield, R. I.; Bellman Brook Bleachery Co., Fairview, N. J.; Cranston (R. I.) Print Works.

When the law was being debated in 1938, labor leaders who favored the annual wage, wrote in Section 7 (b) (2). Translated into plain American, this section says that an employer can be excused from the hours provision and not be a violator, if he does certain things: (1) if he enters into an agreement with employee representatives certified as bona fide by NLRB; (2) if, pursuant to that agreement, he does not work his employees more than 1000 hours in 26 weeks, or more than 2000 hours in 52 weeks; and (3) if he pays overtime for more than 12 hours a day and for more than 56 hours in any work-week.

Murchison Addresses Combed Yarn Group

Dr. Claudius T. Murchison, president of the Cotton-Textile Institute Inc., was honor guest and speaker at a chicken barbecue for members of the Southern Combed Yarn Spinners Association at Gastonia (N.C.) Country Club, March 28.

In his talk Dr. Murchison reviewed legislative possibilities affecting the textile industry and discussed general business conditions particularly from the viewpoint of the combed yarn spinning industry. His talk was followed by discussion.

Reports showing the combed yarn group to be in an excellent statistical position, with little stock on hand and several weeks of unfilled orders still on the books, were given by Mildred G. Barnwell, executive secretary of the association. Owen Fitzsimmons, chairman of the Carded Yarn Group made a short talk on the inter-related problems of the combed and carded yarn groups. J. Harold Lineberger, president of the association, presided.

Waltzlite taffeta from Eichmann & Hecht, made of Eastman acetate rayon yarn is used in this graceful evening gown. The fabric is also used in making the buttons.

New Cannon jacquard bedspread line contains the above "Feathers" pattern ($1.98 at retail). Retailers are suggesting customers make their own drapes from an extra spread or two.

KNOWS ALL—HEARS ALL—SEES ALL

There's no telling what this Government will find out next. A Washington dispatch reports the Census Bureau as saying that women's short skirts add to the farmer's troubles "because it takes less cotton to make a short skirt than a long one." It would take a million bales of cotton to cover women's legs from the knees to the ankles, this august Bureau announces. In a pamphlet, the Census Bureau also advised that "fat women make the farmer happy, but thin women make him sad." . . . The only question left is why the Bureau bothers to take the 1940 census. It seems to know everything already. Mebbe someday it will even hear that old chestnut about adding an inch to a chinaman's shirt.

"Save Your Shirt"

Under the title "Save Your Shirt" a booklet has been prepared which represents the considered view of the Cotton-Textile Institute, with reference to the marketing certificate plan and to the processing tax. Copies of the pamphlet were sent to every daily newspaper in the United States, to every Chamber of Commerce, to the outstanding consumer organizations, and members of Congress.

The purpose of the certificate plan, according to the conclusion reached in this booklet, is to encourage the farmer through a cash transfusion to continue raising cotton on a price basis that automatically reduces his market. "The result is that of giving the patient a transfusion of his own blood," it states. "He needs help if he is going to save *his* shirt, but he certainly is not going to keep it by having the Government 'process' it out of existence."

Commenting on this job, the New York *Sun* states editorially: "The Cotton-Textile Institute has been lucky enough to find somebody who really knows how to write a controversial pamphlet. For clarity, readability, and all-round skill in polemical uses of statistics its booklet 'Save Your Shirt' is as neat a job of the kind as anybody has turned out in a long time. What it does to Secretary Wallace's so-called marketing certificate plan is something dreadful for New Dealers to contemplate."

Certificate Plan Held Dead This Congress

Confirming the position taken by Paul Wooton, chief Washington correspondent of TEXTILE WORLD, in this publication since the January issue, J. C. Atchison, Washington correspondent of the *Daily News Record*, makes this prediction in the March 27 issue:

"Secretary Wallace's certificate plan for financing part of the farm benefits through processing taxes by another name is dead for the present session of Congress, unless the remote contingency should arise that the House should fail to agree to any part of the major increases made by the Senate to the Department of Agriculture appropriation bill, which today rests with a conference committee of the two branches.

"A survey of the situation today disclosed that the House Committee on Agriculture, which several weeks ago devoted four sessions to hearing an exposition of the certificate plan, has laid that subject aside indefinitely, and that, in the Senate, there is no disposition to consider it.

"Strong opposition to the certificate plan exists in both branches of Congress for two reasons: Fundamentally, because it is realized processing taxes by any name would result in some increases in prices to consumers and no such indicated result finds many Congressional friends, especially in an election year; secondly, because Secretary Wallace would exempt corn and hogs from such a tax plan, yet would propose benefits be paid those producers."

Photo by S. D. Kirkpatrick

"Fashions Out of Test Tubes" was a feature of the recent "Modern Pioneer" dinner in Chicago under N.A.M. auspices. Vinyon, Nylon, Teca, Lastex, Santoglas, Clairanese, Koroseal and Fiberglas were featured. Above is garment made from a casein fiber derived from milk.

TEXTILE CALENDAR

Knitting Arts Exhibition, 36th annual exhibit, Commercial Museum, Philadelphia, April 15 to 18, 1940.

National Association of Hoisery Manufacturers, annual meeting, Philadelphia, April 17, 1940.

Underwear Institute, annual meeting, Philadelphia, April 18, 1940.

American Cotton Manufacturers Association, annual convention, Greenbrier Hotel, White Sulphur Springs, W. Va., April 25 to 27, 1940.

Cotton Manufacturers Association of Georgia, 40th anniversary convention, Sea Island, Ga., May 16 and 17, 1940.

National Cotton Week, May 17 to 25, 1940.

Cotton Manufacturers Association of South Carolina, annual meeting, Cashiers, S. C., May 24 and 25, 1940.

Fourteenth Annual Outing, Philadelphia Textile Manufacturers Association, Manufacturers Golf and Country Club, Oreland, Pa., June 19, 1940.

American Society for Testing Materials, annual meeting, Atlantic City, N. J., June 24 to 28, 1940.

National Safety Congress, Stevens Hotel, Chicago, Oct. 7 to 11, 1940.

American Association of Textile Chemists and Colorists, 20th annual meeting, Hotel Commodore, New York, Oct. 18 and 19, 1940.

Southern Textile Exposition, Textile Hall Greenville, S. C., March 31-April 5, 1941.

56 Government Designs For Cotton Hose

Fifty-six types of full-fashioned cotton hosiery have been designed and released to the trade by the Bureau of Home Economics of the Department of Agriculture, under legislation designed to stimulate the use of cotton. One of these, Government Style No. 106, has already been introduced commercially by Gotham Silk Hosiery Co., to retail at $1.00. This is illustrated on page 67 of this issue.

Jacobs Stresses Need Of Integrated Data

The cotton textile industry needs a complete picture of its stock position, and this can be had by totaling of stocks in the hands of mills, in the hands of finishers, and in the hands of converters, declared Dr. William P. Jacobs, director of the Print Cloth Group of Cotton Manufacturers, in an address before the Textile Square Club in New York, March 26.

Dr. Jacobs stated that he would consider it a sound step to give publicity to the industry's stock position, "if and when the full stock position and condition can be publicized," but that he would consider it detrimental to the interests of all concerned "to give pub-

licity to the stocks of mills alone and thus encourage an exaggerated case of 'stockphobia' at times when actually circumstances indicate that the patient is well on the mend, if not on the verge of full recovery."

His reference to what he called "stockphobia," or the fear of large stocks, was based on his belief that 99% of the woes of the cotton-textile industry are not actual, and require only a psychological treatment. He pointed out that over a year or over a period of years there is no real problem of excess stocks, and that what is needed to be done is a long range merchandising job.

Cotton Week Plans

Evidence of cotton's usefulness in the distribution of foodstuffs is found in the recognition of this year's observance of National Cotton Week, May 17 to 25, by the National Association of Food Chains, the National Retailer-Owned Grocers, the National American Wholesale Grocers Association, and the Independent Food Distributors Council. According to Charles K. Everett, of the Cotton-Textile Institute, sponsor of the event, requests have already been received from these groups for sufficient quantities of the official Cotton Week Poster to insure distribution among all the member stores.

Through the Institute of Distribution, Inc., non-grocery chain stores are also making extraordinary preparations for participation in this year's observance of Cotton Week. Paralleling these efforts, similar activities are in progress among the stores affiliated with the National Retail Dry Goods Association.

The Cotton-Textile Institute anticipates that newspapers will make even more of National Cotton Week as a stimulant to local business generally. In a number of cities and towns, newspapers are planning special Cotton Week issues.

A cotton fashion show of summer wear was presented by Miss Catherine Cleveland, consumer consultant of the Cotton-Textile Institute, March 20, at the Essex House Hotel in connection with the dinner meeting of the Savings Banks Women's Association of New York.

Pays Tribute to Massachusetts Labor

"The skill and cooperative attitude of Massachusetts workers are outstanding factors in the success of Massachusetts industry," declares John F. Tinsley, president of the Associated Industries of Massachusetts, in an advertisement released in *Business Week*, *Time*, and *Fortune*, by the Massachusetts Development and Industrial Commission.

Commenting on this statement, Powell Cabot, chairman of the commission, states: "It is the first advertisement of which we are aware, in which the leader of the largest organized body of business in a State, invites other business men to come to his State, and uses as his chief argument, the quality and attitude of labor. In these times it is an encouraging sign to have such a tribute to labor paid by a leader of business. That such a cooperative spirit between employers and employees is typical of Massachusetts, is shown in the fact noted in the advertisement: 'Massachusetts leads all other major industrial States in freedom from time lost per employee from strikes.'"

Mr. Tinsley is also president of Crompton & Knowles Loom Works, Worcester, Mass.

TEXTILE MILL SIDELIGHTS—No. 15

"All right, wise guy!"

Magazines Feature Cotton

The *National Geographic Magazine* expects to devote one issue during 1940 to the southern cotton industry, covering both the raw cotton and cotton manufacturing sectors. The article will be written by Jesse R. Hildebrand, assistant editor, and will be illustrated by 16 color plates and many photographs to be taken by Willard R. Culver.

Both Mr. Hildebrand and Mr. Culver are now in the field, working in cooperation with the National Cotton Council and the Southern Combed Yarn Spinners Association.

Other publications featuring cotton (for fashion) this year are: *Good Housekeeping*, which, in its Apr. 20 issue, will publish a 12-page "Cotton Primer"; *Vogue* which (May 1) will present eight cotton features—including four to six pages of spectacular evening frocks; *Harper's Bazaar* which will put out a special cotton edition presenting new cottons in the high style bracket; *Mademoiselle* which will feature in its April issue "Cotton in Fashions" with special designs by Mary Lewis.

To Survey Need of Textile Training

The Textile Foundation has authorized a special survey of the possibilities of providing a year of training in the textile industry for graduates of engineering schools and colleges who have not been previously associated with the industry. The report is expected to cover the needs of such a preparatory training. Such needs were indicated by a recent report on the training of men for the textile indus-

try. The survey will cover such points as the possible number of persons desiring such training, and the best form the training should take. The training proposal is that of an organized vocational guidance course. The survey is in charge of Thomas R. Taylor, Washington, D. C. Frederick M. Feiker, educational consultant for the Foundation, will cooperate.

Hosiery Cooperatives Face Union

The largest of the cooperative mills in Philadelphia was placed on the "unfair list" early last month by the American Federation of Hosiery Workers, with the charge that the management proposed a drastic wage cut. As a matter of fact the 520 employees who have invested from $150 to $300 each in the enterprise were inclined to accept the 20% cut in order to keep the mill going. Later the employees voted to continue at full wages.

Dixie and Enka Win Textile Tournament

Winners of the Class A trophies in the Southern Textile Basketball Tournament held last month at Greenville, S. C., were Dixie Mercerizing Co., Chattanooga, Tenn., boy's team, and American Enka Corp., Asheville, N. C., girl's team. There were 79 teams, with nearly 1,000 players from five southern States participating in this tournament which is one of the outstanding athletic events of the South.

Fraternity Convenes

Phi Psi Fraternity is holding its 37th annual convention at Philadelphia, April 11 to 13. A feature attraction is an exhibition of products of members of the fraternity; with prizes for the best exhibits. Included also are a series of trips to interesting historical and industrial spots in and near Philadelphia, and the annual meeting of the fraternity.

Waste Men Hear of Label Laws

At one of the sessions of the annual convention of National Association of Waste Material Dealers, held Mar. 20 in New York, Arthur Besse, president, of National Association of Wool Manufacturers, spoke in some detail on labeling legislation pending in Congress. He pointed out that his association favored the type of labeling which identified fiber content without any attempt to indicate grade or quality with catch words. He admitted that that program would increase the difficulties of the waste dealers, but it would not, he went on, "result in the degree of chaos which would be engendered by the so-called virgin wool proposal." The latter type of bill, he said, will mislead the public by giving them a false value connotation to the term "virgin" or unmerited stigma to the term "reworked", and he added that labeling set up upon this basis will increase misrepresentation in the sale of apparel and possibly turn a certain amount of business normally going to wool fabrics over to materials of an entirely different fiber content.

Wage Rate Upheld; Opp Appeal Denied

The suit by the Opp (Ala.) Cotton Mills and 15 others to set aside the minimum wage rate of 32½¢ per hour, made effective under the wage-hour law on Oct. 24, 1939, was denied by the Fifth U. S. Circuit Court of Appeals on April 2 at New Orleans. The Court upheld the constitutionality of the act and the appropriateness of the procedure whereby the 32½¢ figure was set. Although it did not affect the Court's decision, the following statement is quoted from the Court's opinion: "We are constrained to believe, however, that a preponderance of the evidence discloses that there is a decided rate disadvantage as against southern and southwestern mills."

A. G. Myers' Daughter To Be Cotton Queen

Sponsored by the local chapter of the Junior Chamber of Commerce, Gastonia, N. C., will have its third annual Cotton Festival June 10 to 15. Miss Freida Myers, daughter of A. G. Myers, receiver of Textiles, Inc., member of the Board of Directors of the Cotton-Textile Institute, and president of the North Carolina Cotton Manufacturers Association, will preside as Queen of the Festival.

The coronation of the Queen and the King (who has not yet been announced) will be held on Wednesday, June 12. Governor Clyde Hoey of N. C. will preside at the coronation ceremonies. George Jenkins is chairman.

Chattanooga Yarn Assn. Succeeds Textile Group

The Chattanooga Yarn Association has been organized to succeed the Chattanooga Textile Group, and plans launched for the annual Spring Outing and Golf Tournament, as result of meeting at the Read House Mar. 16.

Nylon Hosiery Mills Listed

A list of 36 mills which are making Nylon hosiery for national distribution was published in a recent issue of the "Special News Letter" of the National Association of Hosiery Manufacturers. It is stated that this list is not official and does not come from the du Pont company, but is presumably complete and accurate. The list follows:

Apex Hosiery Co., Archer Hosiery Mills, Bear Brand Hosiery Co., Berkshire Knitting Mills, Burlington Hosiery Associates, Cannon Mills Hosiery Co., Chipman Knitting Mills, Claussner Hosiery Co., Cooper, Wells & Co., Davenport Hosiery Mills, Dexdale Hosiery Mills, Globe Knitting Mills, Gotham Silk Hosiery Co., Holeproof Hosiery Co., Hoover Hosiery Co., Hugh Grey Hosiery Co., Julius Kayser & Co., Larkwood Silk Hosiery Mills, McCrary Hosiery Mills, Magnet Mills, Marshall Field & Co., May Hosiery Mills, Mission Hosiery Mills, Mock, Judson, Voehringer Co., National Silk Hosiery Mills, No-Mend Hosiery, Inc., Nolde & Horst Co., Oakbrook Hosiery Mills, Phoenix Hosiery Co., Propper-McCallum Hosiery Co., Real Silk Hosiery Mills, Rollins Hosiery Mills, Rosedale Knitting Co., Vanity Fair Silk Mills, Van Raalte Co., Art Craft Silk Hosiery Mills, and Wayne Knitting Mills. Others may be added.

Nylon Hosiery Retailing Starts Next Month

Although most merchants in the trade recognize that the available supply of Nylon hosiery which can be put into retailers' hands by May 15 will probably fall far short of meeting the demand, it was not expected at the time of going to press that there would be any postponement of the launching now planned for May 15. Although the amounts available to the end of the current year will probably not exceed 10% of the hosiery industry's usual silk consumption, hosiery buyers have been holding off on their regular commitments until they could see the effect of Nylon on the consumer. Particularly in the lower price brackets, the hosiery trade regards this delay as quite useless since no Nylon hosiery will be offered to retail at under $1.15. It is understood that prices on Nylon hosiery are quoted on a net basis and that no advertising allowances, discounts, rebates, etc., are to be permitted. The manufacturer who desires to include any such items must quote above the minimums which have already been set. Retailers are about to draft a statement as to what can be expected of Nylon stockings.

Hosiery Market Watchful

Hosiery market is observing, a little nervously, the progress of lisle top full-fashioned hosiery in retail circles. These numbers were introduced last fall in volume because of the extravagantly high levels to which raw silk had advanced. Silk has settled back to a more workable basis and the lisle tops are not essential now to produce 79¢ retailers. Whether the consumer will like them, remains to be seen. They are now listed in one large branded line at 69¢ retail. If they prove popular, the unbranded manufacturers can get them out at a still lower price to the consumer.

Nylon has its repercussions from South America. Hosiery mills down there are interested in purchasing the yarn in order to knit their own products from it. It is difficult to see where any exportable surplus is coming from.

N. C. Fashion Show

The 12th Annual Fashion Show held by the Home Economics Departments of N. C. colleges for women in cooperation with the Textile School of N. C. State College will be held in Raleigh, N. C., April 25. More than 100 students will model costumes they have designed and made in their class rooms, from fabrics made at the textile school.

Cotton Goods Market Unsettled

Weakness in cotton gray goods about the middle of March disappointed many merchants although none of them expected anything like a real buying movement. One or two of the early price cutters sold a fair yardage but otherwise trade was dull. For example, about a million yards of 4-yd. 80 squares were sold at 6½¢ while most mills were holding for 6⅝¢. After a brisk market at end of March, trade turned dull again.

Prices on branded sheets and pillow cases were reduced by lengthening discounts which led to the placing of some business. Percales moved reasonably well to cutters-up on the basis of 10½¢ for 80 squares. Mercerized yarns were reduced 2 to 4¢, 60s-2 going to 67¢.

Wool Goods Open for Fall

American Woolen Co. on March 18 launched its fall 1940 men's wear season with prices generally unchanged from those in effect for spring, but 25 to 32½¢ above those named at the spring opening last August. Other houses followed with offerings and general sampling was continuing into April at a fairly brisk pace. Business had previously been placed for fall delivery on a contingent basis so the backlog for that season is fairly good.

The American No. 8205 piece-dye worsted from Shawsheen was opened for fall at $1.87½ compared with last August's price of $1.57½. Champlain No. 2434, a worsted-rayon gabardine, is now $1.40 against $1.20 last August. Buyers say that prices for the new season are reasonable.

Rayon Shipments Remain Good

Shipments of rayon yarn to domestic users continue satisfactory, although the time of year is arriving when rayon weaving trade often meets a slack period. Yarn deliveries for the first two months of 1940, totalling 61,100,000 lb. were 16⅔ better than the same two months in 1939. There has been a growing call for pigments, and acetate and cuprammonium demand continues in excess of available production. Lining cloths and the luster yarns which go into them have

CLINTON

STARCHES

FOR ALL
TEXTILE PURPOSES

QUALITY
AND
SERVICE

CLINTON
COMPANY

CLINTON — — IOWA

MODERN PRINCIPLE FOR

CONDITIONING

AND

TWIST-SETTING

Are you interested in modern principles applied to textile processes? If so, come to the Knitting Arts Exhibition in Philadelphia, Booths 14 and 15, and let us explain in detail how the now famous "H-W" Conditioner and Twist Setter produces a true water vapor. Such finely-diffused vapor, acting like a gas, penetrates uniformly to the interior of the fiber, instead of merely coating the surface. Thanks to this principle, unique among conditioners, the "H-W" does its work thoroughly and rapidly at low temperatures unharmful to the yarn.

"H-W"

"H-W's" claims for attention do not rest on speed and thoroughness, however. Equally important is the constant uniformity of treatment through lot after lot of yarn. This is accomplished by automatic control of temperature, humidity, and time of operation—all instruments standard equipment.

"H-W"

We would enjoy showing you also how the ingenious patented design of the conditioning chamber eliminates the danger of condensation forming on the ceiling and dripping on the yarn, to cause wet spots.

"H-W"

Standard equipment includes 12" Bristol control hygrometer for the control and permanent record of temperature and humidity, time clock and motor for complete automatic operation. Lined either with monel metal or 18/8 stainless steel, insulated and covered on the outside with Johns-Manville asbestos board—floor is fabricated nickel-clad steel. These quality features insure many years of trouble-free operation.

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been falling off. The situation on fine yarn sizes remains very tight.

A number of fabric houses are returning to 60-day terms on their greige goods from the 30-day terms which some observers believe cramped the activities of converters.

Staple fiber is well sold ahead and imports are increasing. It is stated that the 2,334,000 lb. of staple fiber were imported from Japan in January, which almost equals the total amount of Japanese staple fiber imported for all 1939.

Raw Wool Wavers Slightly

Prices on raw wool during March were weak at times but not much ground was lost. The average of ten types of apparel wools in Boston at middle of month was 87.2¢ against 89.4¢ at beginning of month, and 89.9¢ at mid-February. American buyers are operating in the Argentine on a larger scale than a year ago. It is said that British interests have opened a buying office there, although they are not yet active in the market. American interests are understood to have bought considerably more wool in South Africa.

Raw Silk Dull and Easier

Raw silk through March continued steady with New York quoting around $3 for Crack XX 78%. Early in April prices receded to a basis of $2.70. Imports and mill takings are both less than a year ago. The Japanese domestic silk industry is getting restless under their Government's system of allotment, which system is apparently one of the important factors in stabilizing the market this year after the fireworks exhibited in 1939.

Price Cuts in Silk Hosiery

As the result of radical price cuts named around the middle of March, the full-fashioned hosiery market is back very close to the levels which were current in 1939 before the last two advances. Gotham's lowest price all-silk number which previously had been quoted at $7.25 with a suggested retail price of $1, has been reduced to $6 with the suggested retail price of 79¢. The lisle-top numbers are being continued, but on a reduced basis which permits retailing at 69¢. Unbranded all-silk lines have been forced down to the basis of $5.25 in some quarters.

Marked curtailment continues in the hosiery field, and, at the end of March, some executives estimated that mills were not running more than 33%. Many others recognized that curtailment is quite as radical as any seen for some seasons, but doubt that it amounts to such an estimate.

Outerwear Holds Its Gains

Knitted outerwear manufacturers have done a substantial amount of business for the current spring season and are looking forward with hopes to the coming fall. Swim suits and swim trunks of knitted materials have staged a comeback after being threatened by woven goods. Novelty sweaters have obtained a recognized place in the field and fall business is looking up. There has been good movement in $1 cotton sweaters. The showing of these goods was held back until Jan. 2 and shipments were begun on Feb. 1, a program which manufacturers believe has distinctly helped their markets.

Substantial Underwear Trade

Knit underwear in its various forms has recorded a satisfactory trade. Further development of novelties complicates the business over what it was some seasons back, but mills which are most alert to style changes are making the most

Catasauqua, Pa., plant of General Ribbon Mills, has recently completed this addition for expansion. Plant now employs 1,200.

out of current trade. Abbreviated underwear holds the center of the stage for the summer season, while long drawers and sleeved shirts, inspired by winter sports, seem to be making a comeback for fall.

Carpet Prices Up

Smith and Masland carpets were advanced 5 to 7% on Mar. 25. Mohawk advanced prices 5% on Mar. 15 and Bigelow-Sanford raised from 5 to 7% on April 8. These advances were announced some time in advance and it is believed that a reasonably good business on the part of dealers, who covered ahead of the rise, was taken. The total increase in price on carpets since the beginning of the war amounts to about 15%.

This and That

Terry anklets for women and children are turning into one of the successes of the spring season in the hosiery market. It is said that the entire plant of W. B. Davis & Son, Fort Payne, Ala., has been given over to manufacture of these styles. The company holds the patent on elastic tops with which the anklets and socks are equipped.

Spring meeting of American Society of Mechanical Engineers will be held May 1 to 3, in Hotel Bancroft, Worcester, Mass. John F. Tinsley, president, Crompton & Knowles Loom Works, will speak at luncheon, May 1. E. Wadsworth Stone, of Bigelow-Sanford Carpet Co., will present a paper on "Purchase and Use of Fuel" at technical session, May 2.

The effect of war on women's clothes include a "blackout" style—a pitch-black suit with luminous paint glossed over the lapels, pockets and cuffs to increase visibility in London's war-dark night. A similar development was shown at the Leipzig Fair in Germany, in an exhibit of women's stockings which shine at night, thus helping to avert blackout accidents.

International Silk Guild, New York, has issued a 28-page brochure in which is given a resumé of the silk highlights in the recent Paris openings.

"*Wake up in a flower garden*" is the slogan with which Lord & Taylor, New York retailers, recently advertised printed bed sheets and pillow cases. The material was a percale with an all-over floral print in soft pastel shades. Price for the 90 x 108 in. size is $7.50.

Botany Worsted Mills has issued another of its dramatized annual reports with descriptions and drawings which clarify to the uninitiated the meaning of the various items on the balance sheet or profit and loss statement. As previously

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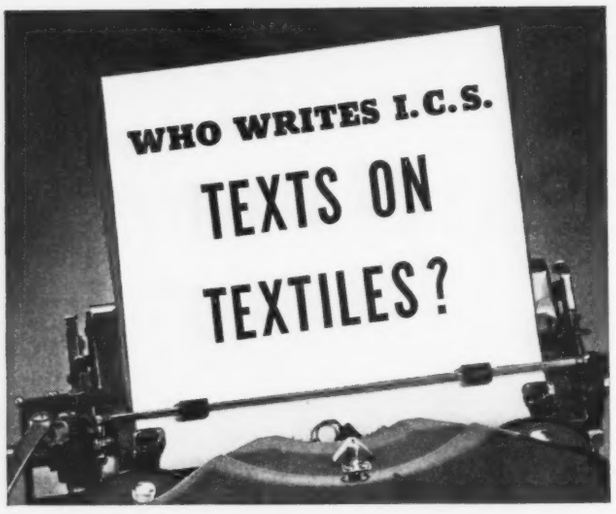

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noted the company shows a net profit for 1939 of $874,507 as against net loss for the previous year of $336,085. Total sales for 1939 were nearly $16,000,000, an increase of 43% from the previous year. The year was the most satisfactory one for many years. In fact, there are only two other years in the last fourteen during which Botany has shown a profit. It is believed that the company is now showing the benefits of Col Johnson's long-range program.

The first city in which the "Stamp Plan" for relief distribution of cotton goods will be tried is Memphis.

Pequot Mills have introduced a new line of muslin bed sheets known as "Beauty Hemmed." These sheets are woven with selvage on the ends and are torn on the width. The sheets, therefore, have narrow-stitched hems down each side which are said to be much stronger than tape selvages.

At a meeting of the New York Section, A.A.T.C.C., held March 29, Paul J. Choquette, of Cranston Print Works spoke on controlling the processing of spun-rayon piece goods. Barrett Fisher, of Sidney Blumenthal Co., discussed the dyeing and finishing of pile fabrics.

Piedmont Section of the A.A.T.C.C. has completed plans for an outing, to be held at King Cotton Hotel, Piedmont, N. C., on April 27. The program includes presentation of technical papers, a golf tournament, and a banquet.

Use of synthetic resins in hosiery finishing was discussed by A. Kempton Haynes, of Rohm & Haas Co., at a meeting of the South Central Section A.A.T.C.C., held March 16, in Chattanooga, Tenn.

A new finish designed to prevent germ growth on rayon lining fabrics and to render them odor resistant has been developed by United States Finishing Co. The finish is known as Vitra-Fresh.

"*Nothing to Wear*, or 25,000 Years in Search of a Suitable Costume" is the title of an exhibition of garments through the ages being held at the Brooklyn (N. Y.) Museum, Mar. 15 to May 5.

South Carolina Cotton Manufacturers Association will hold its annual meeting May 24 and 25 at High Hampton Inn, Cashiers, N. C. As usual this is to be an executive session.

Crompton-Richmond Co., New York, is champion of the Textile Basketball League for the third consecutive year, defeating J. P. Stevens & Co., 47 to 41 in the play-off of a tie.

Department of Justice may not put the selling practices of the carpet industry before a grand jury as planned since manufacturers have given agents of the Anti-Trust Division free access to their books.

Swim-for-Health Week is set for June 24 to 29 this year.

Annual statistical survey by Textile Machine Works discloses that as of February there were 404 full-fashioned hosiery mills operating 16,110 machines. In the year 116 new mills opened and 83 liquidated or changed hands.

Goodall Co. will close its Palm Beach show place on Lincoln Road, Miami, Fla., about April 15. The show place had a frontage of more than 125 ft. with nine main and four arcade windows. Goodall has used this store as a merchandising laboratory for its Palm Beach suits, slacks, etc. It is understood that the store will be located at some other center next year.

Glenbarr Fabrics, Lowell, Mass., which has been producing hand-woven woolens for several years, is now offering its product to quality clothing manufacturing houses. Prices on 28-in. goods run from $1.50 to $3.00 per yard. The firm operates thirteen hand looms.

The Paris correspondent of TEXTILE WORLD reports that

at least two important couturiers are promoting woolen stockings for use with women's sports clothes. The particular numbers referred to are described as hand knit of open mesh in bright colors and with a scarlet star at the knee and ankle. In some outfits hand-knit wool gloves to match are used.

The annual show and dance of Lowell Textile Players, of Lowell (Mass.) Textile Institute, will be held April 26, at the Rex Auditorium. "The Bishop Misbehaves" has been selected as the play.

The Rhode Island School of Design, Providence, R. I., is introducing a new scholarship which will make possible a graduate course covering the rayon field. The new scholarship of $1,200, to be known as the Atlantic Rayon Scholarship, will be awarded annually to the senior textile student who in the opinion of an award committee possesses those qualities which indicate future ability as a textile executive.

Raw Cotton Notes

The final grade and staple report of the 1939–40 cotton crop, released by the U. S. Department of Agriculture, proves what the shippers have contended ever since the crop started to move last fall: that the crop averaged shorter in length than the 1938 crop and that the proportions in the lower grades of white cotton were larger. The Governmental report states that the average length of the 1939 crop was 31.80 thirty-seconds of an inch compared with 32.19 thirty-seconds for 1938. The proportion of this crop's ginnings classed as $\frac{29}{32}$ of an inch and shorter, was about 5% more than the 1938 season. The proportions in the lengths of $1\frac{1}{16}$ inch and longer were somewhat smaller. Tenderable grades and staples represented 92% of this season's ginnings compared with 94% last year.

Ginnings from the 1939 crop were 11,477,133 running bales, of which 11,448,139 were American Upland, 26,824 American Egyptian, 2,170 bales Sea Island.

* * *

Other important raw cotton news of the month is that of the recent conference in Washington which resulted in revised grade standards for American-Egyptian Pima cotton and new grade standards for American Egyptian SXP cotton. These will become effective March 20, 1941, the Pima standards replacing those adopted in 1929, and the SXP standards making their first appearance. Until that time either the present standards or the new standards may be used in cotton trading. The type known as SXP which was in the experimental stage ten years ago has now become a substantial portion of the American Egyptian crop.

Spinners of these cottons will welcome the adoption of half-grade boxes, supplementing the full-grade boxes. In this way they get more representative color and trash, and can be assured of getting actual delivery on grades represented by the boxes. Boxes may be purchased at $3 each, f.o.b. Washington, for domestic shipment, $4 for foreign.

The committee making up the boxes consisted of E. A. Shaw, of E. A. Shaw & Co., Boston; Felix Montgomery, of E. W. Montgomery & Co., Greenville, S. C.; S. A. Steere, Goodyear Tire & Rubber Co., Akron, Ohio; W. B. Hall, Southern Combed Yarn Spinners Association, Gastonia, N. C., and others from the U. S. D. A.

* * *

The Culloden One-Variety Cotton Community is winner of the trophy awarded by the Cotton Manufacturers Association of Georgia for having produced the best results in the Georgia Cotton Improvement Program during the last year.

100 Volume
HYDROGEN PEROXIDE
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THE 100 volume Hydrogen Peroxide produced by Pennsylvania Salt Manufacturing Company is an exceptionally stable material. Its uniform oxidizing power makes it an excellent bleaching agent for all textile fibers and fabrics.

It is available in glass carboys and aluminum drums. Stocks are conveniently located, and our technicians are always ready to help you with difficult textile applications.

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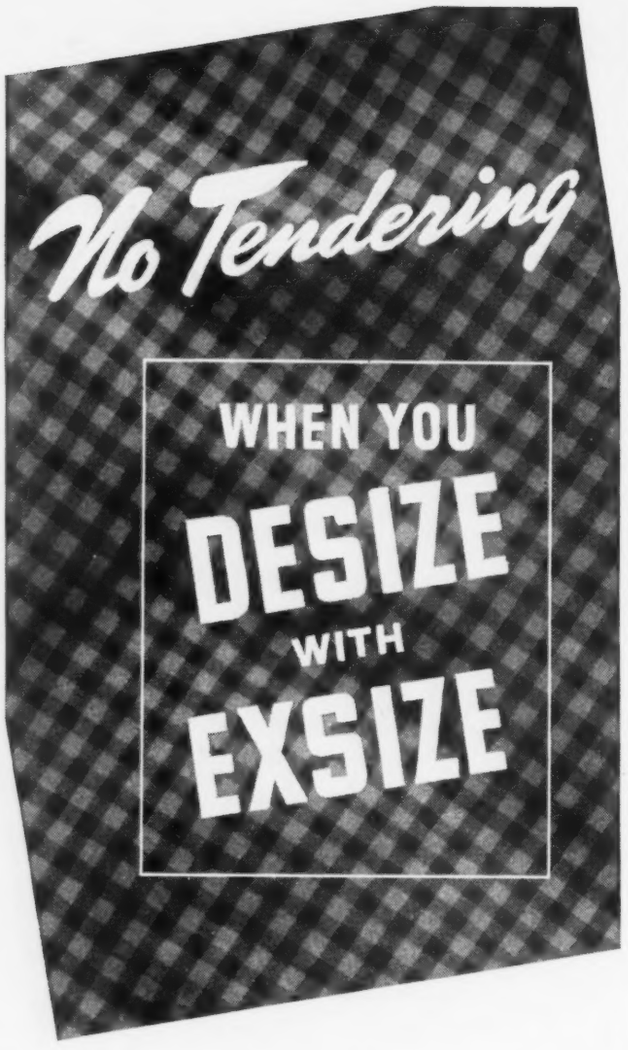

The gentle action of the enzymes in Exsize *cannot* tender the sheerest fabric. Yet Exsize removes starches quickly and thoroughly. It conditions fabrics perfectly for bleaching, dyeing and sanforizing. The cost is nominal.

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"An Inside Tip on a Red-Hot Investment"

Editor, TEXTILE WORLD:

My sincere admiration for a man who can understand the behavior of a human being insofar as his labor for a living is concerned.

Your "Inside Tip on a Red-Hot Investment" was interesting when I read it last January; today, when I reread it, it seemed more alive and more stimulating and I was compelled to take action.

Showing appreciation for fine work and loyalty by a pat on the back and a few kind words is all right for a time. However, as a man's efficiency improves and he assumes more and more responsibility, he himself becomes aware of his own growth and is, consequently, proud of his progress. This state of mind cannot last indefinitely without some outside help. When an employee reaches that level he needs and deserves a "voluntary salary increase." If the latter is not forthcoming, then that particular individual becomes lackadaisical and methodical in attitude and an indefinable something seems to have sapped his customary vigor. An intelligent man does not come to a standstill; he either goes up or he goes down. In the condition just described, he is going down. Keen foresight on the part of his employer will avert such a catastrophe.

Congratulations to the mill fortunate enough to have as general manager a man who possesses that rare ability of being able to recognize a walking talking asset when he sees one.

Hoping to read more and more of your candid opinions, I am

NIGHT SUPERINTENDENT

Editor, TEXTILE WORLD:

I want to express my personal appreciation for your editorial "An Inside Tip on a Red-Hot Investment," in your January issue.

I am a plant manager, having come up from a "handy boy" many years ago. I have full authority to purchase machinery, supplies and materials running into hundreds of thousands of dollars annually. In spite of this fact, there has always been a system whereby monthly salaries, no matter how small, are determined by higher executives and are supposed to be approved by the president.

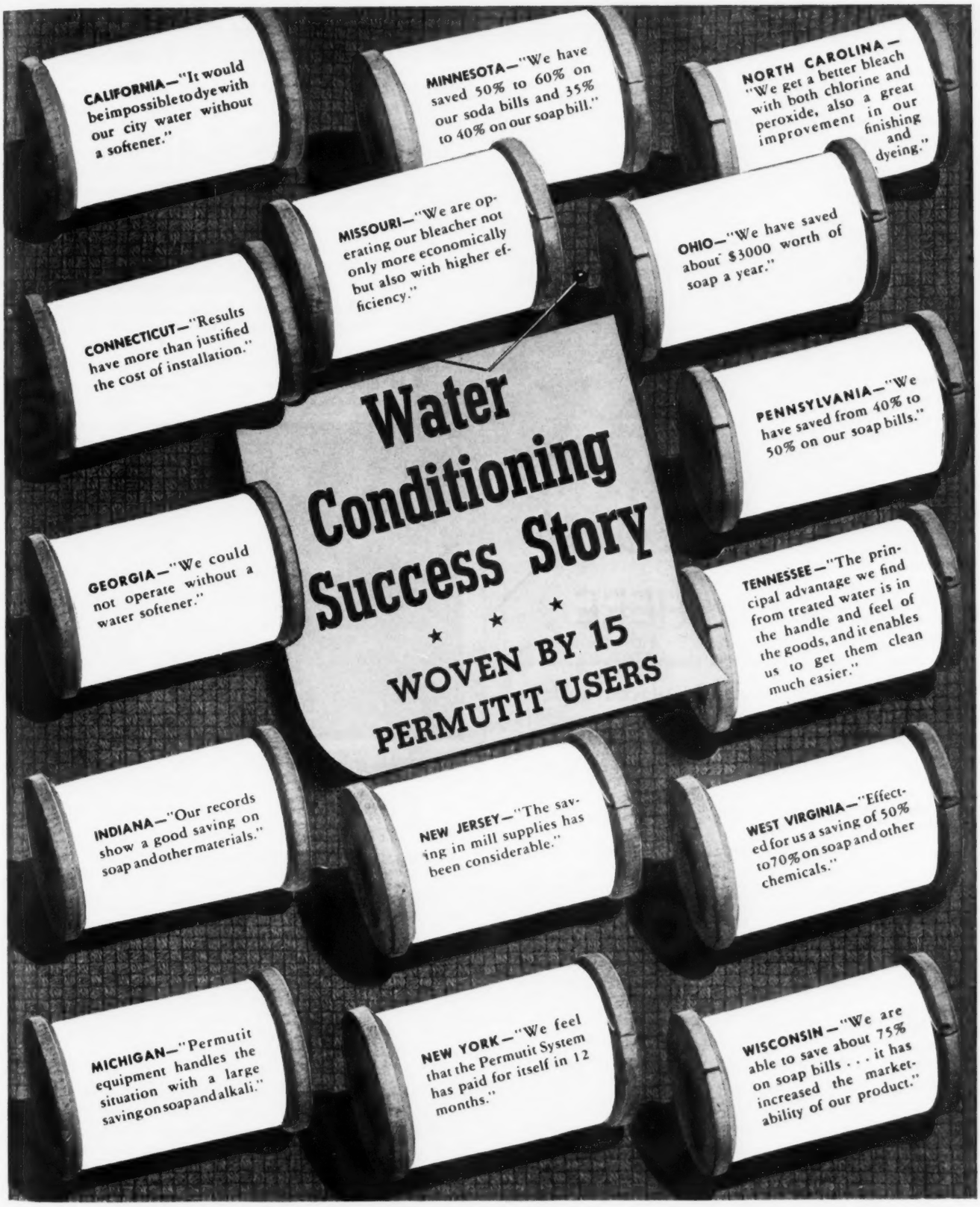
I have trained many valuable men and women and have seen them leave the organization because the "unsolicited" $5 or $10 per month raise was not given when it was justly deserved.

It has always occurred to me as being a short-sighted policy for a man to have power to buy a $100 typewriter or a $10,000 machine or a $100,000 raw material contract, and yet be denied the privilege of giving a $5 or $10 a month raise to a worthy assistant when he knows it is justly deserved.

This is not written in any spirit of disloyalty or sour-grape attitude, but purely in appreciation of your courage in covering a very vital subject in the way you have. I hope the editorial is widely read.

MANAGER

A Believe-It-Or-Not from Anderson, S. C., proves that cotton is age-proof if not market-proof. Cotton picked in the fall of 1917 when the selling price for that grade and staple was 40¢ per lb., was brought to the gin last week, ginned and sold on the day's market, bringing less than one-quarter its former value. The lint was unimpaired, and the seed, being entirely sound, was sold at top price for crushing purposes.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MINNESOTA—"We have saved 50% to 60% on our soda bills and 35% to 40% on our soap bill."
NORTH CAROLINA—"We get a better bleach with both chlorine and peroxide, also a great improvement in our finishing and dyeing."
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NEW YORK—"We feel that the Permutit System has paid for itself in 12 months."
WISCONSIN—"We are able to save about 75% on soap bills . . . it has increased the marketability of our product."

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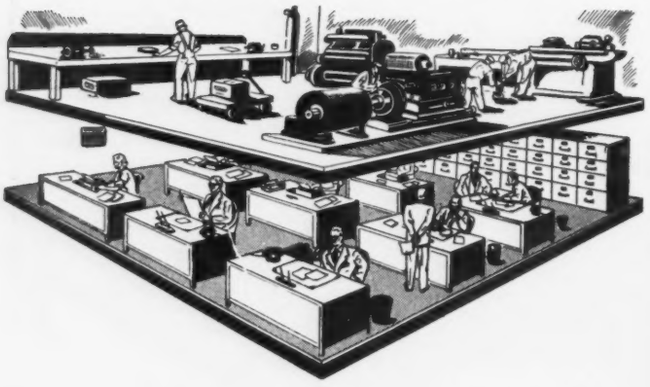

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Knitted Outerwear Association Re-elects Whitman as President

THE NATIONAL KNITTED OUTERWEAR ASSOCIATION held its 22nd annual convention and banquet at the Hotel Astor, New York, on April 2 and 3. Roger W. Whitman, of American Hosiery Co., was re-elected president. About a week before the meeting, Harold R. Lhowe, executive director and general counsel of the association for many years, announced that he was not a candidate for reappointment as executive director. It was therefore expected the meeting would have the serious business of selecting a successor. However, the office of executive director was eliminated by a new clause in the by-laws. It was announced by President Whitman that the duties of the office would be in the hands of the president and directors, together with the secretary and staff.

Harold R. Lhowe still continues his service to the association in the capacity of general counsel. He has been

Harold R. Lhowe, who retires as executive director of knitted outerwear association, but continues as general counsel. He aided in forming the body in 1912.

connected with the group since its inception in 1912, and for more than 10 years has had entire charge of the association's affairs. The membership in the early days might be counted in dozens, whereas today the figures top 400. The duties involved in relationship with this greatly increased membership have taken much of Mr. Lhowe's time from his general practice of law in which he has always been engaged.

The 22nd annual banquet of the association, April 3, marked a new high in attendance, with something approximating 1,000 persons, against a previous high mark of 912 recorded last year. Sol Sussman of the Sussman Yarn Co. was chairman of the committee in charge and Morris J. Solomon of the Davis Yarn Co. was co-chairman.

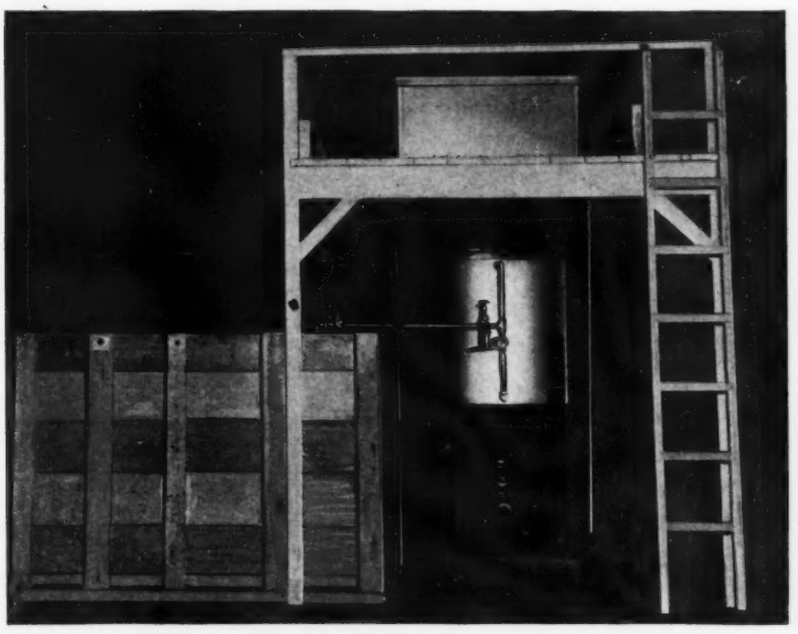
The business meeting of the association which took place in the afternoon of April 3 considered numerous current problems of the industry. Of particular importance were the details connected with working out of Wage-Hour Law standards, since the 35c. minimum for the industry goes into effect on July 1. The question of learners, however, it was pointed out, still remains to be settled.

Other officers elected were Al. I. Greenhill of Greenhill & Daniel, as treasurer; Sidney S. Korzenik, as secretary (re-election); and regional vice-presidents A. H. Liebster, M. & M. Knitting Mills, for the Philadelphia region; I. B. Davies, Bradley Knitting Co., for the Midwest area; Ben Schanzer, Henry Schanzer & Sons, for the Eastern section; Arthur W. Reinthal, Bamberger-Reinthal Co., for the Cleveland district; and Edgar W. Stewart, Pacific Knitting Mills, for the West Coast.

Expert engineering—with Lixate Brine—

makes

4-way savings



CRYSTAL SPRINGS BLEACHERY, Chickamauga, Ga.

This company uses Lixate Brine from the installation illustrated here, for processing textiles. A careful estimate of costs indicates that textile mills can make substantial savings in the dyehouse, by the use of Lixate Brine, plus an additional saving of marked importance in regenerating zeolite water softeners.

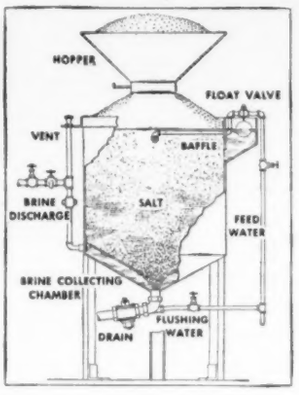
★ ★ ★

MAJOR SAVINGS in textile wet processing are made by the automatic operation of The Lixate Process For Making Brine, built in by skilful engineering. Special problems of installation, brine expansion, level dyeing and others, are met by special engineering.

For every purpose where brine can be used—whether for regenerating zeolite water softeners or dyeing processes, The Lixate Process improves production as it lowers costs.

The Lixate Process, using Retsof, Avery and Detroit brands of Rock Salt, would still make these 4 major savings:

1. Lower labor cost for handling salt.
2. No labor or power cost for mixing brine.
3. Lower labor cost for distributing brine—or solid salts—throughout the plant.
4. Users report savings of 10% to 20% in amount of salt required.



This cross-section diagram shows the automatic operation that makes these savings. Salt flows by gravity from the hopper to the Lixator below. Water enters through a spray nozzle at the top, dissolves the salt without agitation and becomes fully saturated brine. Brine which is self-filtered and crystal clear rises in a collecting chamber to a discharge pipe and flows by gravity to the storage tank, where a constant supply is maintained automatically.

Find out what savings are now being made by Lixate Brine in many textile mills, located in widely separated textile centers. Lixate Brine is demonstrating its marked economy in the processing and dyeing of silk, wool, cotton and rayon. Write for full details.

SALT FOR EVERY PURPOSE

International Salt Company, Inc., can be unbiased in its recommendations for proper use of Lixate Brine, for International produces every type and grade of evaporated salt and Rock Salt. The advice and counsel of the Research Department of International Salt Company, Inc., is freely offered to any industrial user of salt.

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The Lixate Book contains valuable technical information on the properties of salt brine, in addition to detailed information about The Lixate Process and pictures of many installations. A copy will be sent free on request. If you prefer, a Lixate engineer will call and demonstrate the savings this Process can make in your own operations.

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FOR MAKING BRINE

INTERNATIONAL SALT COMPANY, INC., Scranton, Pa., New York, N. Y.

SALES OFFICES: *Buffalo, New York • Philadelphia, Pennsylvania • Boston, Massachusetts • Baltimore, Maryland • Pittsburgh, Pennsylvania Newark, New Jersey • New York, New York • Richmond, Virginia • New Orleans, Louisiana • Cincinnati, Ohio • St. Louis, Missouri*

—a bath would kill him!

When Old Man Trouble makes his presence known in your dye house or finishing plant—look to your water supply! Often a "bath" of pure, 100% soft, clear, iron-free water will completely obliterate him.

HUNGERFORD & TERRY WATER PURIFICATION SYSTEMS

produce exactly that kind of water at a cost of only a few cents per thousand gallons. Water that assures better fabric, brighter colors, closer dye matching, whiter whites and holds waste down to the minimum.

To determine whether or not your water supply is causing you trouble and expense we will make an impartial survey without fee or obligation. If a purification plant is indicated our estimate of your requirements will be included in the survey. No "sales pressure" is included in H. & T. engineering service. Write us today.

• • •

HUNGERFORD & TERRY, INC.

WATER PURIFICATION PLANTS DESIGNED
INSTALLED *and* GUARANTEED
CLAYTON, NEW JERSEY

NEWS ABOUT MEN

Cyrus J. Janover, for 14 years with Brand & Oppenheimer, New York, has resigned to establish his own business, the Janover Textile Corp. to convert rayon and cotton for the men's and women's apparel trade.

William L. Mohr, of Iselin-Jefferson, New York, has been elected vice-president of Alabama Mills, Inc., Birmingham, Ala.

Auguste Richard, vice-president in charge of sales of Pacific Mills, New York, has been elected to the company's board of directors.

W. A. Drisler, for many years with Callaway Mills, has become vice-president and sales manager, of Pond Lily Co., New Haven, Conn.

H. I. Irwin Moraff, for the last 16 years head of Moraff, Craig Co., New York, converters, has joined the organization of the Algonquin Printing Co., New York.

John P. Maguire, of John P. Maguire & Co., New York, has been elected a member of the board of directors of Cluett, Peabody & Co., Troy, N. Y.

Jack M. Loeb has resigned from Cohn-Hall-Marx Co., New York, to form the Stratford Textile Corp., which will specialize in underwear and sportswear fabrics.

Joseph A. Whelen, formerly with Cannon Mills and more recently with Textiles, Inc., is now associated with the National Spinning Co., covering Pennsylvania and New York.

C. C. Overton has become associated with L. Bachmann & Co., New York, to conduct a department specializing on medium price rayon and cotton mixtures for suiting fabrics. Mr. Overton has resigned from Bibb Mfg. Co., with which he went seven years ago to start a suitings department after experience running back many years with the former Lawrence & Co. in the development of moleskins, khaki cloths, gabardines, etc.

Donald Tansill, vice-president of the Pepperell Mfg. Co., **John C. Borden,** of the Borden Mills, and **James W. Cox,** of Iselin-Jefferson Co., are members of a cotton textile market committee appointed to seek contributions to the $1,000,000 fund to maintain and advance the Metropolitan Opera, according to an announcement by George A. Sloan, campaign chairman, and former president of the Cotton-Textile Institute.

Dr. Robert Franklin Pool, plant pathologist at North Carolina State College will become president f Clemson (S. C.) College July 1, succeeding **Dr. E. W. Sikes,** retiring.

William H. Bullwinkel, for the last 15 years with Bliss, Fabyan & Co., New York, has joined the newly organized sales office of Mooresville Cotton Mills.

Elmer Hansen, vice-president of the Allen-A Co. and manager of its underwear mill at Bennington, Vt., has resigned. He will be succeeded as manager at Bennington by **J. P. Schramm,** who has been his assistant for some time.

Samuel A. Salvage, former chairman of the board of American Viscose Corp., New York, won 27 prizes at the recent Flower Show in New

Callaway Mills Changes

Callaway Mills, LaGrange, Ga., announced the following resignations, transfers and promotions effective April 1:

W. A. Drisler of the Industrial Fabric Division, New York office, resigned to accept position of vice-president and sales manager of Pond Lily Co., New Haven, Conn.

Frank S. Graves transferred from sales manager Valway Division to Industrial Fabrics Division in New York.

Marshall R. Abbott of the Boston office transferred to inactive duty, subject to call.

C. J. White Jr., transferred from chief engineer in LaGrange to the Industrial Fabric Division, New York office.

W. C. Farley transferred from Consumer Division to Industrial Fabric Division, New York office.

Howard L. Marsh, of New York office, transferred to inactive duty, subject to call.

Harold H. Barnard promoted to New York manager of Industrial Fabric Division.

Elliott Fulton of Chicago office transferred to New York office to become sales manager Valway Division.

R. E. McTigue, formerly in LaGrange sales office, becomes personnel director of the company.

FORWARD WITH TUBIZE

as Tubize moves

FORWARD WITH FASHION

TUBIZE TODAY is moving forward at ever-increasing speed ★ ★ ★ into an ever-widening orbit of service. New Tubize Yarns, new Tubize Fabrics, are providing weavers and knitters, designers and apparel makers, wholesalers and retailers alike with *new opportunities, new ideas for sought-after merchandise and expanded sales* ★ ★ ★ and are giving the consumer *greater utility, fashion-right beauty, dependable quality.*

FABRIC WEARING QUALITIES CHECK TESTED
TUBIZE
tested quality
RAYON
APPROVED BY AN INDEPENDENT TESTING LABORATORY

The Tubize merchandise slogan, "*Sell the Seal and Seal the Sale*" is achieving an ever-increasing significance. Aggressive consumer advertising vitalized by the unique buying confidence built by institutions such as Good Housekeeping, Woman's Home Companion, Jean Abbey radio programs, and big-name promotions of retail stores, have won for the Tubize Certified Quality Seals the interest, faith, and actual purchasing support of millions of American women. For details you are invited to write to

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TWO PARK AVENUE · NEW YORK CITY
Viscose and Acetate Rayon Yarns and Fabrics

HIT OR MISS METHODS . . .

Hit or miss methods of selecting soda ash, caustic soda, and other alkalies you require for textile operations have gone out of date.

Today, there are five important requirements to be considered when you place your order for an alkali . . .

QUALITY—Solvay Alkali quality is assured. The oldest and largest alkali producer . . . Solvay Alkalies have established the quality standards for alkalies for years.

FORM OF PRODUCT—Many Solvay Alkalies are produced in various forms to meet your specific requirements.

UNIFORMITY—No hit or miss methods here—Solvay Alkalies are always as specified!

DISTRIBUTION—Three huge Solvay Plants in important industrial centers and many stock points assure efficient and on time deliveries.

SERVICE—Do you have problems in alkalies? Solvay Technical and Engineering Service Division is maintained to help you.

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NEWS ABOUT MEN

York, out of a total of 28 entries made by him. He had nine firsts, nine seconds and nine thirds. He has been a regular exhibitor at these shows for a number of years and specializes particularly in tulips. Mr. Salvage was honored at dinner Apr. 12 by the Denier Club, New York as the "Pioneer rayon yarn salesman."

William J. Lyons, recently with Southeastern Cottons, Inc., is now associated with Pope & Earley, Inc., New York, to head a special department for the merchandising of both filament and spun-rayon gray goods.

Joseph E. Hanson succeeds **Alan A. Wells** as manager of the sales promotion division of National Retail Dry Goods Association, according to announcement by **Lew Hahn,** general manager of the association.

George F. Johnston will be in charge of the towel department in the new direct selling office established by Mooresville Cotton Mills in New York early this month.

Brooks Darlington, for some years with the Du Pont company has been named sales promotion manager of the Nylon Division of E. I. du Pont de Nemours & Co., Wilmington, Del.

George Frederick Brackett, Jr., previously with Bliss, Fabyan & Co. is now associated with the Rayon Division of E. I. du Pont de Nemours & Co. as salesman with headquarters in the Charlotte office of which **Frank H. Coker** is district sales manager.

E. Shaw Cunningham, general manager of Dallas (Tex.) Cotton Mills was elected president of the company recently. He succeeds **W. B. Marsh.** Other officers are **Kirby McDonough,** and **Murray Samuels,** vice-presidents; **Fred W. Brunken,** secretary-treasurer. Mr. Cunningham will continue as manager of the plant.

J. C. Walters has been promoted from night overseer of weaving at Bama Cotton Mills, Enterprise, Ala., to general overseer of weaving.

Z. L. Underwood has resigned as overhauler at Pomona Mfg. Co., Greensboro, N. C., and accepted position as head overhauler of spinning at Edna Mills Corp., Reidsville, N. C.

J. M. Jordan, formerly with the No. 3 plant of Cowikee Mills, Eufaula, Ala., has been transferred to the No. 1 plant as overseer of carding and spinning.

Pola Stout who has achieved fame for her hand-loomed original wool fabrics, is now heading a new department with Botany Worsted Mills to serve the higher-priced fashion houses.

W. P. MacDougall was recently elected president of Belding-Corticelli Ltd., Montreal, Canada. Formerly vice-president and general manager of the company, Mr. MacDougall succeeds the late A. O. Dawson.

Samuel P. Hunt has been elected president of Amoskeag-Lawrence Yarns, Inc., a subsidiary of Amoskeag Industries, Inc., in Manchester, N. H. **Arthur O. Roberts** is secretary and **John R. McLane,** treasurer.

Charles L. Fead has been elected president of John L. Fead & Sons, Port Huron, Mich., succeeding the late Charles C. Fead.

James H. Porter, Macon, Ga., vice-chairman of the board of directors of the Bibb Mfg. Co., has given the money for the purchase of a memorial carillon to be installed in the First Methodist church at Covington, Ga., as a memorial to the grandfather, the late William McCracken, who served for many years as hymn master.

S. W. Cramer, Jr., president of Cramerton Mills, Inc., was toastmaster at the luncheon given in Charlotte by the N. A. M. at which about 400 guests were present.

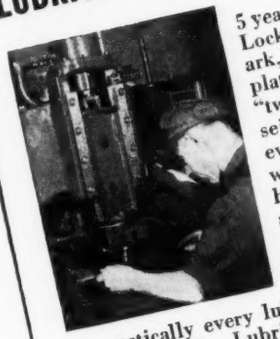
John Land, formerly with the Thrift unit of Kendall Co., Paw Creek, N. C., has entered upon his new duties as secretary and treasurer of Threads, Inc., Gastonia, N. C.

Herbert Sieben, vice-president and general manager of Richmond (Va.) Piece Dye Works, recently received a certificate from L. P. Vaughan, president of the Federation of Dyers, Local 27, C.I.O., af-

LUBRIPLATE LUBRICANTS SAVE 3 WAYS—

1

LUBRICATION TIME CUT 75%



5 years ago The National Lock Washer Co., Newark, N. J., fed Lubriplate to a lubrication "twister". At once press seizing stopped . . . forever. What's more, it was found that one lubrication lasted as long as the four previous. It's not surprising that today—you find Lubriplate carrying the load in practically every lubrication task throughout the factory. *Try* Lubriplate on the toughest job in your plant—and you'll never use anything else.

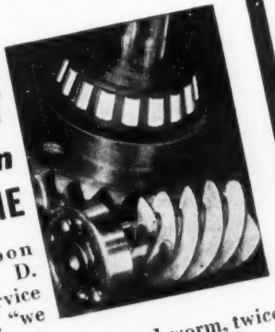
2

AT BORDEN'S SCALDING WATER DOESN'T WASH LUBRIPLATE AWAY

Let them come—those blasts of scalding water used to clean machinery in Borden's plants. Unlike former lubricant, Lubriplate sticks, keeps bearings fully lubricated without corrosion. Add Lubriplate's nearly perfect "covering" power to its characteristic cleanliness—and you quickly understand why Borden's has depended on Lubriplate Lubricants for this and other difficult dairy jobs in its many plants through more than 6 years. Why not follow Borden's lead . . . eliminate lubrication "worry" in *your* plant—for all time!

3

STOPPED GEAR REPLACEMENT Saved $50 on EACH MACHINE



"On our Chambon presses," writes I. D. Rowland, Mono Service Co., Newark, N. J., "we used to lubricate a bronze gear, working against a steel worm, twice a day and had to replace the $50 gear once a year. Then we tried Lubriplate. That was 3 years ago. Up until now we haven't had to replace that $50 gear once! And it looks like new! Moreover we lubricate only once every 3 days."

For Immediate CASH SAVINGS . . . Investigate LUBRIPLATE LUBRICANTS

The cost of a lubricant is not in its price alone. More important is the *frequency* of lubrication plus the cost of replacements due to faulty lubrication. Because Lubriplate lasts several times longer, you buy far less over a year's time. What's more, your cost of parts replacements and power consumption is reduced. Without obligation, write. We'll see that you receive enough Lubriplate for a thorough test that will prove how much Lubriplate really saves on work, worry and money!

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FISKE BROTHERS REFINING CO.
NEWARK, N. J. TOLEDO, OHIO
Dealers from Coast to Coast

LUBRIPLATE

THE WHITE LUBRICANT THAT MINIMIZES WEAR

N-25 BEATS SOAP

New detergent proves superior—beats soap at own game!

Already there are hundreds of cases throughout the textile industry where Houghton's N-25 has proved better than soap in every respect . . . under both normal and abnormal conditions. In many cases where soap is rendered ineffective and inefficient, N-25 does the job with outstanding efficiency and economy.

N-25 is being used extensively and very successfully for scouring, dyeing, soaping off, laundering, washing, boiling off or wetting out. Always it shows excellent detergency at all temperatures, high sudsing action and extraordinary wetting-out and penetrating properties.

We would welcome the chance to prove these claims . . . in *your* plant. Write for factual folder, or ask the Houghton Man.

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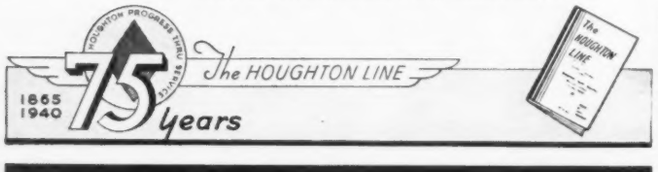

filiate, recording the union's apprecation of cordial spirit shown by the management of Richmond Piece Dye Works in bargaining with the workers over the last three years.

Carl A. Rudisill, prominent combed yarn manufacturer, has announced he will be a candidate for the N. C. House of Representatives from Gaston County.

William P. Jacobs, director of the Print Cloth Group, was guest speaker at the Wool Club luncheon, New York, March 26. His subject: "Phases of the Print Cloth Picture".

J. J. Barnhardt, vice-president of Cannon Mills Co., Concord, N. C., and active in civic, religious and charitable organizations in Concord, was awarded, on March 6, the 1939 Citizenship Cup as "Concord's most valuable citizen of the last year".

Harry L. Griffin, for 14 years a member of the *Charlotte,* (N. C.) *Observer* editorial staff, has resigned to accept an appointment with the Federal Wage and Hour division, Dept. of Labor. He will be assigned to the Charlotte, N. C., offices upon completion of his training course in Washington.

A. M. Stack has been made secretary-treasurer of the newly organized Alamance Hosiery Mill, Graham, N. C.

Sam Cole, formerly overseer of carding and spinning at Cowikee Mills, Eufaula, Ala., has been promoted to speed checker for this unit and the units of the company at Union Springs, Ala., and Ozark, Ala.

W. H. Connor has resigned as overseer of spinning at Edna Mills Corp., Reidsville, N. C., and has accepted a similar position with Brookside Mills, Knoxville, Tenn.

Frank Splaine has been named agent of both Gonic Mfg. Co., Rochester, N. H., and Cocheco Woolen Mill, East Rochester, succeeding **William Morrill,** who resigned due to poor health. Mr. Splaine has been superintendent of the Gonic plant.

Oliver Cross has resigned as secretary of Marion (N. C.) Chamber of Commerce and accepted position with the Cross Mill, Marion.

J. Mack Ulmer was recently transferred to Chattanooga, Tenn., where he is sales representative of Rayon Division of E. I. du Pont de Nemours & Co. He has been with du Pont for six years.

Douglas Tompkins, has resigned his position with Reading (Pa.) Cotton Mills, and has not yet announced future plans.

Sidney E. Hausman, superintendent of the Cedarhurst Plant of the Congoleum-Nairn Co., New York, spoke at the meeting of the Associated Rag Industries, a Division of the National Association of Waste Material Dealers, at at its meeting Mar. 20 in New York.

Werner Lutz has resigned as a director of Bradley Knitting Co., Delawan, Wis.

Frank C. Doyle, superintendent and **Kenneth B. Doyle,** his son and assistant superintendent, have resigned from Swift River Woolen Co., Hydeville, Conn.

A. B. Odom has become night overseer of weaving at Bama Cotton Mills, Enterprise, Ala., succeeding **J. C. Walters,** resigned. Mr. Odom was formerly of Selma, Ala.

W. Lexie Davis, formerly of Proximity Mills, Greensboro, N. C., has become superintendent of Edna Mills Corp., Reidsville, N. C.

George C. Edwards has become cloth room overseer of Plymouth Mfg Co., McColl, S. C.

C. B. Hasbrooks, formerly overseer of dyeing of Bladenboro (N. C.) Cotton Mills, has been promoted to an office position.

A. C. Link, who has been associated with the Stark unit of United States Rubber Products, Inc., Hogansville, Ga., has been promoted to superintendent of that unit.

A. H. Baugh, superintendent of Albertville (Ala.) unit of the Saratoga-Victory Mills, has been made also superin-

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AMONG the new superintendents are noted the following:

Herbert Goldberg, of the Algodon Cotton Mills, Bessemer City, N. C.

Hunter West, Clifton (S. C.) Mfg. Co., succeeding **T. C. Drew** who goes to Mayfair Cotton Mills, Arcadia, S. C.

Johnny Burton, Mooresville (N. C.) Cotton Mills.

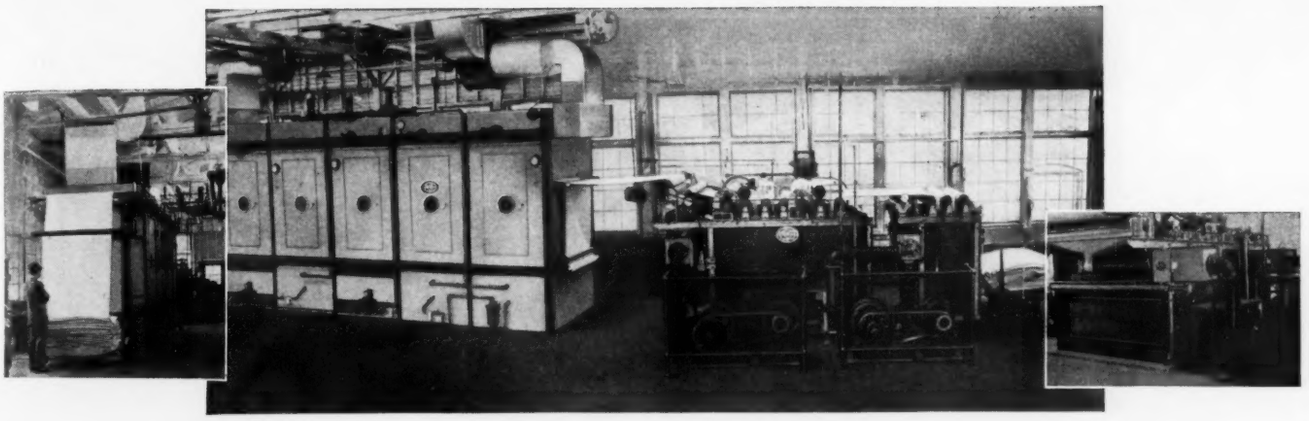
William Grosse, Gastonia (N. C.) Full-Fashioned Hosiery Mills.

C. A. Porter, Gardiner-Warring Co., Florence, Ala.

J. W. Houth, Clearwater (S. C.) Mfg. Co.

W. Preston Dunson, American Thread Co., Dalton, Ga.

B. P. Henry, Dallas-Noval Yarn Mills, Dallas, Ga.



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The Newest Advance in Carbonizing Operation Consisting of A Modern Hunter Wetting Out Tank, Acid Tank, Vacuum Extracting System or Hydraulic Squeeze Rolls, and Carbonizing Dryer Operating as a Synchronized Unit with Patented Range Drive.

PICTURED above is the new Hunter Cloth Carbonizing Unit that largely eliminates costly repairs and upkeep, enabling finishing rooms to carbonize cloth uniformly and continuously at the highest possible hourly production comparable with high quality. The installation of this unit guarantees

A—High speeds with uniform quality standards.

B—High production at low cost per year for acid, steam, labor and upkeep.

C—Continuous operation without shut down and subsequent labor, time and output.

D—Carbonization with control tension throughout thus eliminating any possible chance of weakened tensile strength.

Thus if you plan to install new carbonizing or replace your present equipment, we urge you to get the full details of this modern Hunter unit and inspect some of the lines now in operation.

JAMES HUNTER MACHINE COMPANY

Founded 1847 **NORTH ADAMS, MASSACHUSETTS**

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Facts
PROVEN BY FIGURES

Annual Net Returns 100%+

THE FACTS:

Terrell's modern Bobbin Cleaning System—including New Type K machine, Automatic Bobbin Box Hoist and Conveyor Elevator—provides the most efficient and economical system ever devised for bobbin cleaning. Cleans fifty per cent more bobbins than previous methods and completely eliminates all manual handling, except actual feeding of machines.

THE FIGURES:

Reported annual net savings run as high as 100% and up. Every installation made to date has not only proven this layout does the job better and faster—but that it actually pays for itself, due to increased over-all efficiency, usually in one year—always within two years.

For MINIMUM handling and MAXIMUM efficiency in Bobbin Cleaning

The Terrell Machine Co., *Inc.*

CHARLOTTE, N. C.

Luther Pilling, Danielson, Conn.....N. E. & Canada
E. W. S. Jasper, Inc., Elizabeth, N. J.....Penn. & N. J.
Geo. Thomas & Co., Manchester, Eng.....European Agt.

tendent of the company's unit at Guntersville, Ala.

Paul L. Epley has resigned his position with M. Snower & Co., Opelika, Ala., and become overseer of weaving at Micolas Cotton Mills, Opp, Ala.

T. G. Rayfield, formerly with F. W. Poe Mfg. Co., Greenville, S. C., has become assistant to the overseer of spinning of Mills Mill, Greenville.

H. A. Deal, formerly of Randleman, N. C., has become superintendent of Florence Mills, Forest City, N. C., succeeding **W. B. Morgan,** resigned.

T. C. Drew has resigned as superintendent of Clifton (S.C.) Mfg. Co., and has been succeeded by **Hunter West.**

V. D. Snyder, formerly head of the weaving department of Victor plant of Victor-Monaghan Co., Greer, S. C., has become general overseer of weaving at Mathews Mills, Greenwood, S. C.

J. M. Bivens has resigned as head of the card-grinding department of Edna Mills Corp., Reidsville, N. C., and returned to Phenix Mills, Kings Mountain, N. C., as card grinder at unit No. 1, a position he formerly held.

Furman B. Pinson has become office manager of the new unit of Carter Fabrics Corp., South Boston, Va. He was formerly purchasing agent of S. Slater & Sons, Slater, S. C.

A. E. Howell, formerly associated with Abbeville (S. C.) Cotton Mills, has become overseer of weaving at the Victor unit of Victor-Monaghan Co., Greer, S. C.

Russell Frye has resigned as superintendent of the novelty and rayon yarn department of Groves Thread Co., Gastonia, N. C., and become associated with the spinning department of Chronicle Mills, Belmont, N. C.

William Crane, a student in evening classes of New Bedford (Mass.) Textile School, has obtained position as assistant designer with the Seneca Textile Corp. in New York.

Edwin Sizer, for several years superintendent of O. V. B. Knitting Mills, Spring City, Tenn., has become superintendent of production at the new mill of Hose, Inc., Sweetwater, Tenn.

A. E. Rhash has become superintendent of Alamac Hosiery Mills, Reidsville, N. C., succeeding **Charles Rampp.**

Oscar Brooker who has worked for Fulton (N. Y.) Mills of American Woolen Co. for nearly 52 years in the weaving department. He is 65 years old, and recently received official congratulations from the big company's executives.

T. P. Taylor has resigned as superintendent of Algodon Mfg. Co., Belmont, N. C.

James Hawes recently was transferred to another unit of Icard (N. C.) Cordage Co., and has been succeeded by **R. H. Singleton.**

A. J. Williamson is owner and will be superintendent of Williamson Hosiery Mills, Englewood, Tenn., newly organized.

C. M. Hilderfield has accepted the position of manager of G. & E. Hosiery Mills, Durham, N. C.

Clyde Waldrop has become overseer of weaving at the No. 3 unit of Jackson Mills, High Shoals, N. C.

Nelson Rau has become superintendent of Nolde & Horst Co. of Tennessee, McMinnville, Tenn.

H. T. Ward is now secretary of Granite Hosiery Co., Granite Falls, N. C.

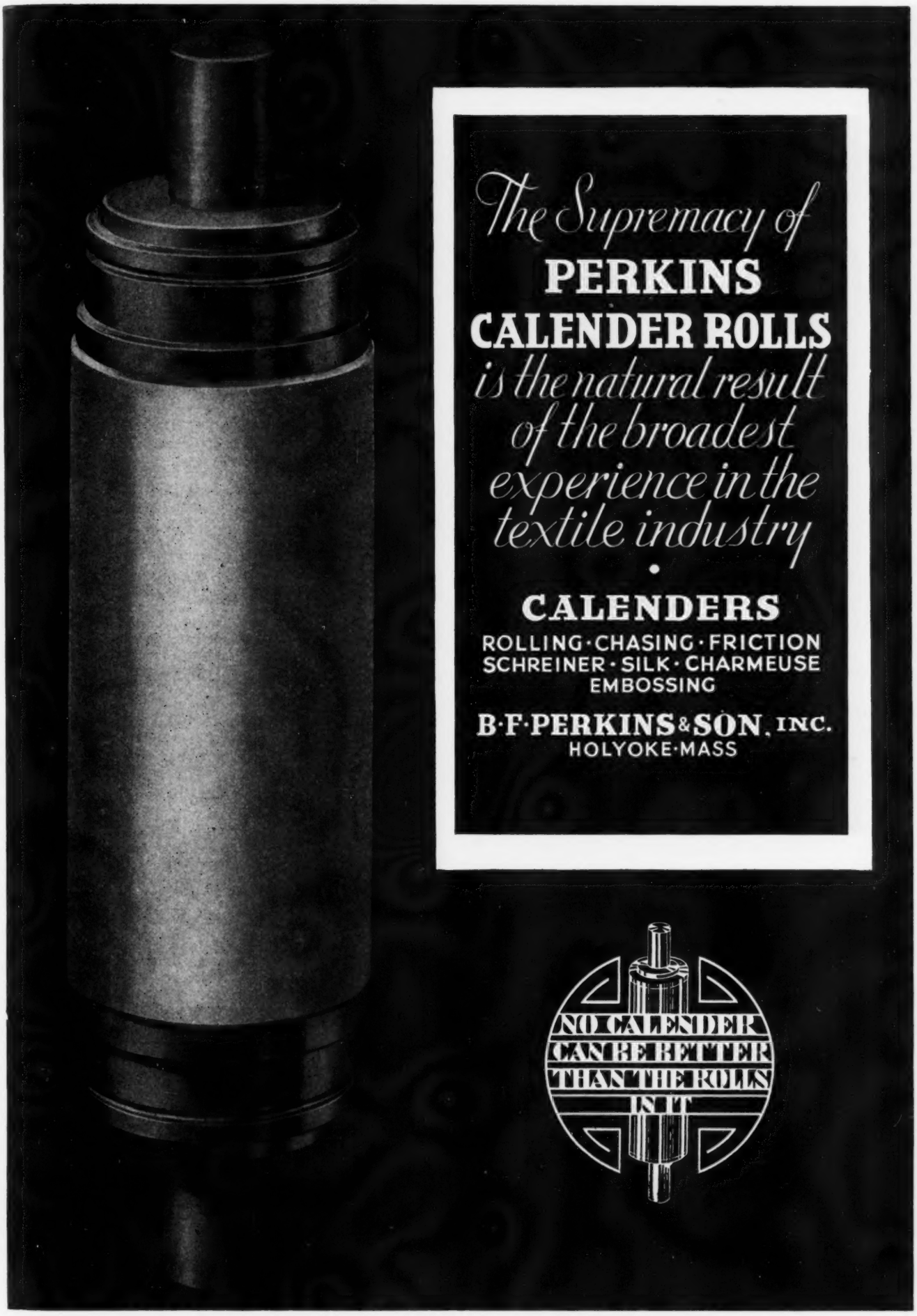
B. P. Henry is now superintendent of Dalla-Noval Yarn Mill, Dallas, Ga.

F. J. Fitchner has become superintendent of Corinth (Miss.) Hosiery Mills, Inc.

R. N. Fickett, Jr., secretary of Fickett Cotton Mills, Whitehall, Ga., is now acting as superintendent, also.

T. F. Hirsh has resigned as superintendent of Lawler Hosiery Mills, Carrollton, Ga., and has been succeeded by **Ed Vaughn.**

T. L. Edwards has become superintendent of Profile Cotton Mills, Jacksonville, Ala.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CALENDER ROLLS
is the natural result
of the broadest
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SCHREINER · SILK · CHARMEUSE
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HOLYOKE·MASS
NO CALENDER
CAN BE BETTER
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to know if your colors are fast to washing —

A Launder-Ometer in your laboratory will tell you in a few hours if your colors will meet Federal, Bureau of Standards, A.A.T.C.C. and A.S.T.M. requirements for washing action.

Fade-Ometer exposures show you quickly if your colors meet these specifications for fastness of light.

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LAUNDER-OMETER *Accelerated Washing*
FADE-OMETER *Accelerated Sunlight*

Why Not? *Have Your Personal Accident and Health Insurance with . . .*

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ACCIDENT POLICY PAYS		HEALTH POLICY PAYS	
ACCIDENTAL DEATH	WEEKLY DISABILITY	$25.00 Per Week for Confining Sickness	$10.00 Per Week for Non-confining Sickness
$5,000-$10,000	$25.00-$50.00		
Estimated Annual Cost $15.00		Estimated Annual Cost $20.00	

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T. W. '40

NEWS ABOUT MEN

W. W. Scott has resigned as superintendent of Gardiner-Warring Co., Florence, Ala., and has been succeeded by **C. A. Porter.**

M. Bulford has resigned as superintendent of Clearwater (S.C.) Mills, and has been succeeded by **J. W. Houth.**

C. L. Eddy has resigned as superintendent of Renfrew Bleachery of the Brandon Corp., Travelers Rest, S. C., and has been succeeded by **Joe Balloch.**

R. L. Hulsey has become overseer of carding at the Sibley unit of Sibley-Enterprise Co., Augusta, Ga. He was formerly with Edna Mills, Reidsville, N. C.

Ira L. Ashe has been made assistant to overseer of carding department of Brookside Mills, Knoxville, Tenn.

Wm. Couch has resigned as hosiery buyer of the Miller-Jones Co., Columbus, Ohio, and become associated with Bryan Hosiery Mills, Chattanooga, Tenn., in an executive capacity.

Benjamin J. Borteck has become manager of Petersburg (Va.) Hosiery Mills, formerly B. G. & D. Hosiery Mills.

B. W. Bingham, formerly overseer of carding and spinning at Brookside Mills, Knoxville, Tenn., has been promoted to general superintendent.

F. N. Moore, formerly of Aliceville, Ala., has become assistant to the overseer of weaving at Micolas Cotton Mills, Opp, Ala.

S. L. Stack has resigned his position with Jefferson (Ga.) Mills to become superintendent of Sanford (N.C.) Mills, succeeding **D. G. Floyd,** resigned.

J. M. Boiter has been overseer of weaving at Fountain Inn, S. C., and Simpsonville, S. C., units of Woodside Cotton Mills.

J. M. Jeffries, formerly of Kosciusko, Miss., has become overseer of the carding and spinning departments of Opp (Ala.) Cotton Mill.

Sam Horne has been appointed assistant to the overseer of carding at Ninety-Six (S. C.) Cotton Mills.

Charles F. Perry has become superintendent of Hickory (N. C.) Knitting Co.

Lewis Avery has become superintendent of the newly organized Harnett Hosiery Mills, Dunn, N. C.

R. M. Horton has become superintendent of Moers Hosiery Mills, Inc., Nashville, Tenn., newly organized mill.

W. R. Garrison has become superintendent of Alamance Hosiery Mills, Graham, N. C.

Daniel J. Gallagher is the new director of the Textile Workers' Union, CIO, for Western Massachusetts, with headquarters at 473 Dwight St., Holyoke. For the last three years, he was assistant director of TWU Salem-Peabody area. **Valery Burati,** whom Gallagher succeeds, has been made educational director and editor of the union's organ "Textile Labor", with headquarters in New York.

J. B. Bozeman, for the last six years in charge of the office at Fort Mill, S. C., unit of Springs Cotton Mills, has been transferred to the Lancaster, S. C., unit.

W. G. Armstrong, formerly of Columbus, Ga., has become overseer of carding at Piedmont Cotton Mills, Egan, Ga.

Charles E. Blossom of New Bedford, Mass., has joined the staff of the Crompton Co., West Warwick, R. I., as assistant chemist.

Earl Beeman, formerly with Pacific Mills, Dover, N. H., has been made superintendent of the Kendall Mills weaving plant at Colrain, Mass., succeeding **Charles Holmes,** who becomes superintendent of the Continental Mills in Maine.

J. H. Nichols has resigned as superintendent of Ottaray and Monarch units of Monarch Mills, Union, S. C., after having held the position for 20 years.

William Couch, formerly with Miller-Jones Co., Columbus, Ohio, has accepted a position as an executive with Bryan Hosiery Mills, Chattanooga, Tenn.

C. E. Tuney has been made superintendent of No. 3 unit of Jefferson Mills, Royston, Ga., and **H. M. Silman** has been made head of the weaving department.

W. George Bleackley, of Providence, R. I., formerly with the Southbridge Finishing Co. of Southbridge, Mass., is now in charge of starching and finishing at the Algonquin Printing Co. of Fall River, Mass.

F. H. Seymour has been appointed superintendent of mechanical department of Santee Mills, Orangeburg, S. C., having been promoted to this position.

Thomas E. Seaman, formerly with Somersville (Conn.) Mfg. Co., has become boss carder for Hayward Woolen Co., East Douglas, Mass.

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In this old-fashioned mechanical savings bank, a coin is first placed in the large monkey's hand. The lever at the base of the tree is then pressed, causing the little monkey to jump on the big one's shoulders and at the same time to give his arm a push. This dislodges the coin, which drops toward the lion who opens his mouth just in time to receive it. The coin goes through the lion into the base of the tree, which is the bank. This is another of the old-time, 19th Century banks that are today collectors' items.

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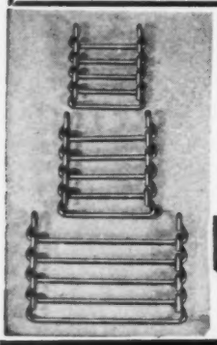

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NEWS ABOUT MEN

Samuel J. Miller nas assumed his new duties as head throwster of Bruck Silk Mills, Cowansville, Que. He was formerly with Burlington Mills and Susquehanna Silk Mills.

Ben Lambeth, Jr., assistant night superintendent at Cannon Mills Plant No. 1, Kannapolis, N. C., was transferred to Plant No. 7 at Salisbury as general night superintendent. He replaces **Ernest Bolick,** who was appointed general superintendent of Central (S. C.) Mills.

L. A. Welch is now connected with the New York Sales District Office of the American Viscose Corp. He previously spent two years in the advertising department of the corporation; prior to that he was with the Susquehanna Silk Mills.

V. D. Snyder has been appointed general superintendent of weaving at Mathews Cotton Mills, Greenwood, S. C. He formerly held a similar position with the Greer (S. C.) plant at Victor-Monaghan Mills.

Norman Greenlaw now has charge of merchandising the men's wear and dress goods from Avondale Mills and Hannah Pickett Mills in Southeastern Cottons, Inc., New York. **Donald Comer, Jr.,** will merchandise tickings, drapery and slipcover fabrics. **William T. Burgin** will handle cotton and part wool blankets. **Milton Foster,** lately with Deering Milliken & Co., will head the brown sheeting department.

H. A. Deal has assumed his new duties as superintendent of Florence Mills at Forest City, N. C., succeeding W. B. Morgan, resigned.

William Grosse, former superintendent of Greensboro (N. C.) Hosiery Mill, has become superintendent of Gastonia (N. C.) Full-Fashioned Hosiery Mills.

John Burton has become superintendent of spooling, winding and warping at Mooresville (N. C.) Cotton Mills. He was formerly associated with Calhoun Mills.

T. G. Rayfield has assumed his new duties as assistant superintendent of spinning at Mills Mill, Greenville, S. C. He has recently been connected with P. W. Poe Mfg. Co. in Greenville.

Obituary

Frederic L. Babcock, 73, for 25 years editor, president and business manager of *Fibre and Fabric,* died at the Cambridge (Mass.) Hospital on March 21 after a 3-days' illness. He was born in Old Lyme, Conn., and served as telegraph operator on the New Haven Railroad before entering newspaper work. He was at one time editor of the *American Wool and Cotton Reporter.* He was secretary of the Master Dyers and Finishers Association and of the National Association of Textile Chemists and Colorists. He was instrumental in starting several associations of operating executives in the New England textile field.

James Guyon Clark, 77, who retired about 12 years ago after serving for 25 years, as manager of the Ipswich Hosiery Mills department in the former firm of Lawrence & Co., died at his home in Staten Island, N. Y., March 21.

Robert E. Peet, 70, at one time president of the former U. S. Worsted Sales Corp., New York, and active in wool goods for many years, died March 20.

John W. England, superintendent of Norton (Mass.) Woolen Co., and for eight years up to 1938, superintendent of Barre (Mass.) Wool Combing Co., died March 21 in Norton.

Frank Wales Eaton, 62, retired chairman of the board of Corticelli Silk Co., died at Morristown, N. J., March 17. He spent his whole business life in the silk trade and retired in 1932 at the time of the merger of Corticelli with Belding-Heminway.

Louis Diamond, 38, for a number of years head of the converting department of Colonial Mills, New York, died suddenly March 14.

William E. Wimer, 64, for many years with Charles J. Webb Sons' Co., Philadelphia, died March 13.

Claude W. McSwain, 58, agent in Cotton Utilization Research Division, Department of Agriculture, and slated for important work with the Southern Regional Research Laboratory, died in Washington, Mar. 12, He had for nearly 17 years taught designing and weaving at Clemson College, and from 1926-35 had been general manager of Pendleton Mfg. Co., LaFrance, S. C.

H. W. Carroll, 74, for many years on the board of directors of Marlboro Cotton Mills and associated with nu-

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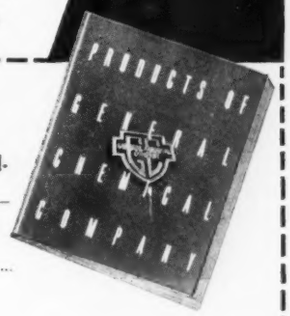

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NEWS ABOUT MEN

merous other business enterprises, died recently in Spartanburg, S. C.

Thomas Webster, 57, for the last 15 years superintendent of the Ames Worsted Co., Lowell, Mass., died recently.

Geoffrey L. Moore, 41, vice-president of George C. Moore Co., Westerly, R. I., died March 4.

James Wood Allen, 81, treasurer of Dartmouth Mfg. Co., New Bedford, Mass., from the time it was organized in 1895 until his retirement in 1912, died March 17.

John A. Hendrickson, 79, founder of Logan (Utah) Knitting Mills, died recently.

N. B. Mills, 86, pioneer textile manufacturer, died at his home in Statesville, N. C., March 19. He organized the Bloomfield Mill 40 years ago, and later the Paola Mill.

De Witt Page, 70, formerly president and general manager of New Departure, and director and a vice-president of General Motors Corp., died suddenly in Florida recently.

Claude B. Townsend, 89, Lumberton, N. C., who served on board of directors of Lumberton mills for many years, banker and lawyer, and oldest living graduate of Trinity College, now Duke University, Durham, N. C., died March 15.

David H. Stroud, Sr., 82, retired rug manufacturer, of Philadelphia died on Feb. 28.

Edwin M. Monsell, 57, president of Sand Springs (Okla.) Textile Mills, died at his home there recently.

R. G. Bush, inventor of machinery for making tufted bedspreads, and Mrs. Bush, were found dead in their home in Dalton, Ga., from the effects of gas fumes from a defective furnace.

Charles Arthur White, 58, secretary-treasurer of Leeds & Northrup Co., Philadelphia, died Mar. 2.

Fred S. Swinbank, 75, for more than 25 years northern Wisconsin representative for the former Allen-A Hosiery Co., Kenosha, until his retirement 15 years ago, died recently.

Otto Ernest Braitmayer, 67, a retired vice-president of International Business Machines Corp., New York, died at Raleigh, N. C., recently while en route to Florida.

Roland T. Dole, for many years a member of the woolen manufacturing firm of E. Dole & Co., in Campton, N. H., died recently.

William N. McAlister, veteran yarn salesman, died in a Chattanooga, Tenn., hospital recently.

David C. Jones, 64, vice-president and general manager of Lunkenheimer Co., Cincinnati, Ohio, died on March 11.

Arthur W. Skinkle, 60, superintendent of warp mercerizing at Southern Mercerizing Co., died in Tryon, N. C., March 17. Services were held at Tryon, but the body was sent to New Bedford, Mass., where he was once with the Holmes Mill, for burial.

John Fleming Harrison, 58, superintendent of Stimpson Hosiery Mills, Statesville, N. C., died March 10.

Thomas W. Curtis, assistant superintendent of the mechanical department of Erlanger (N. C.) Cotton Mills, died March 11.

W. H. B. Sadleir, 84, dean of textile travelling salesmen in Canada, died at St. John, N. B., recently. He represented a group of woolen mills and was active to within a few weeks of his death.

M. E. Stevens, 75, chemical company executive and a former superintendent of Columbus (Ga.) Mfg. Co., died recently.

Samuel A. Ferrell, 70, for 30-years manager of Exposition Cotton Mills store, Atlanta, Ga., died March 16.

M. M. Marshall, 72, for 30 years superintendent of Glencoe (N. C.) Mills, died recently after several years retirement.

W. M. Binkley, 53, Cooleemee, N. C., machinist at Erwin Cotton Mills, died March 17.

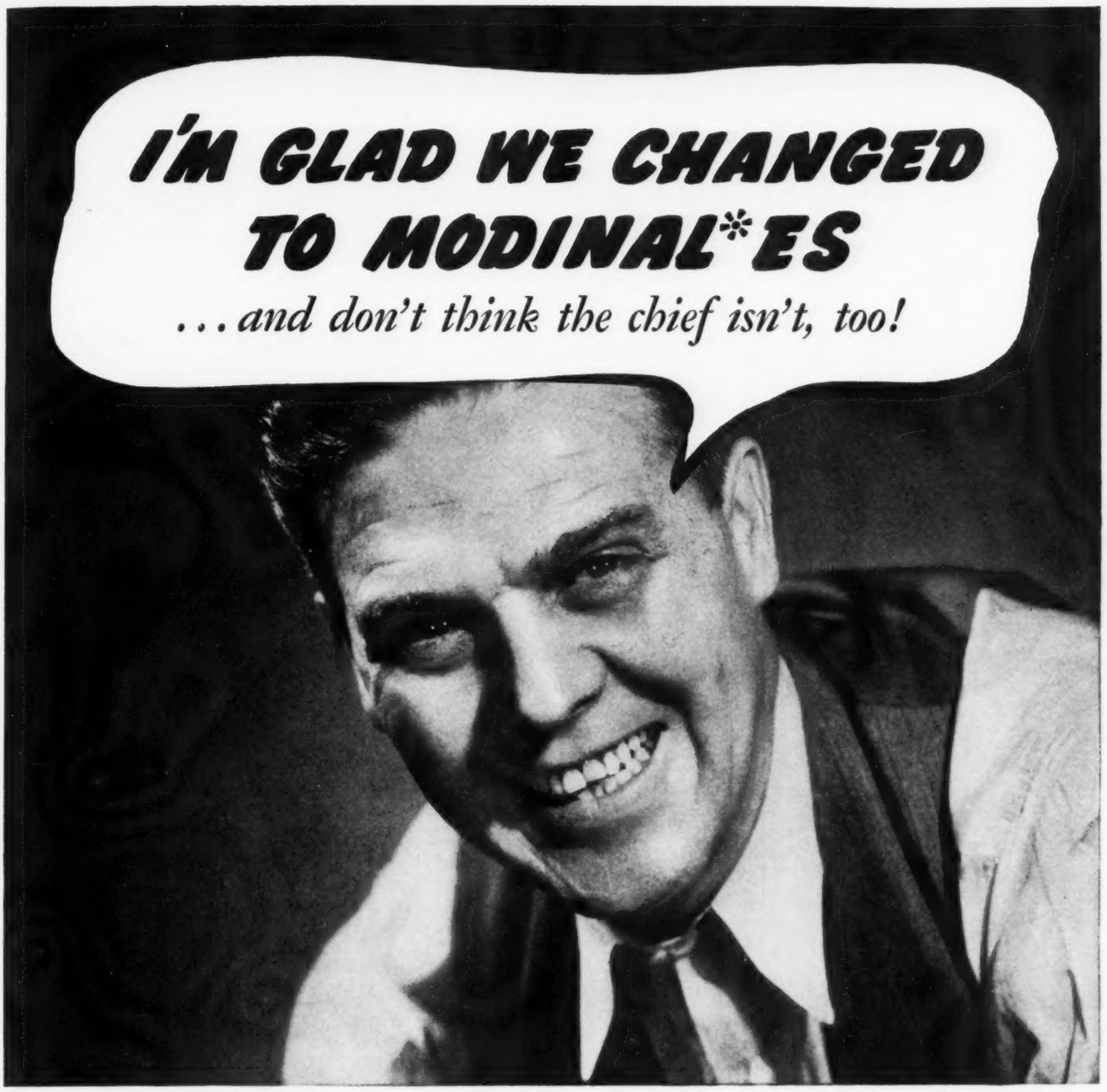
Victor David LePertier, 68, textile dye chemist, died recently in Atlanta Ga. He had been with several cotton mills in that State.

N. Fred Gill, 46, production superintendent of Raybestos-Manhattan, Inc., Stratford, Conn., died recently. He had been with Raybestos for 15 years.

Julian B. Greenstreet, 54, manager of the foundry of Textile Machine Works "Wyomissing," Reading, Pa., died Mar. 10.

Robert Boone, 64, Greensboro, N. C., who was connected with the Proximity Mfg. Co. for 41 years in supervisory capacities, until his retirement several years ago, died Mar. 17 in Charlotte, N. C.

John T. Whittaker, 70, former superintendent of Gosnold Mills Corp., New Bedford, Mass., died at his home in Adams, Mass., where before retirement he had been superintendent of weaving at Berkshire Fine Spinning Associates.



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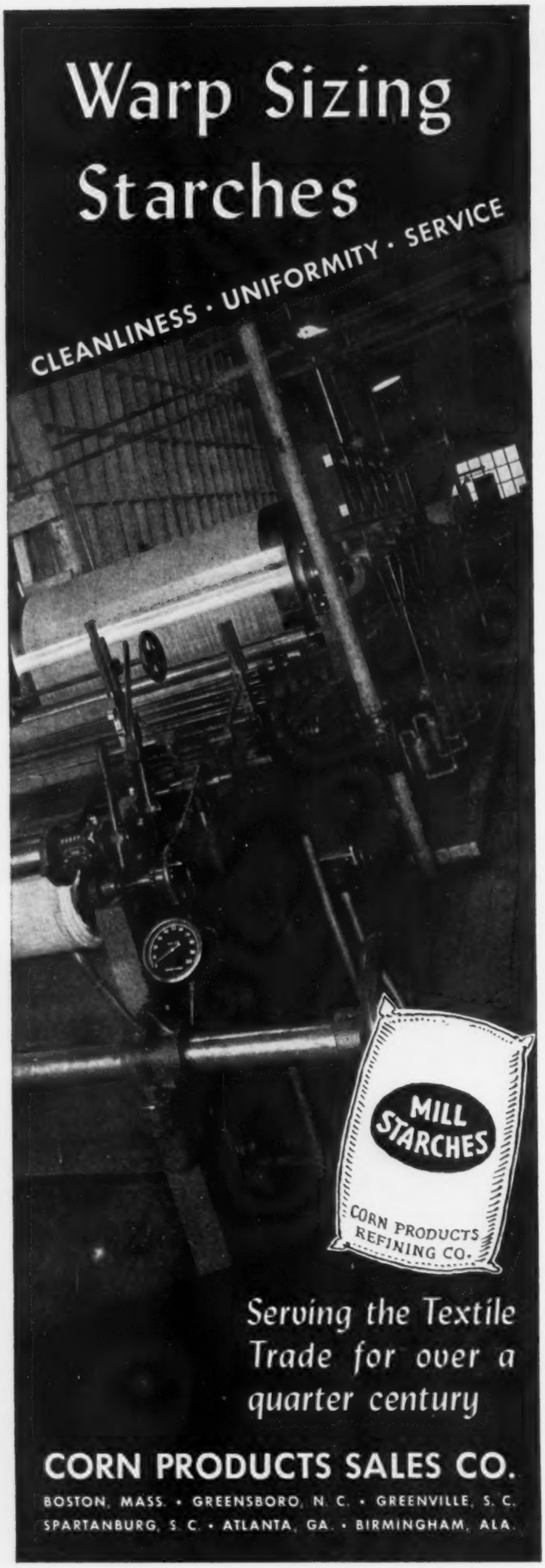
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TEXTILE MILL NEWS

Cotton Mill News

Adams Brothers Mfg. Co., Adams, Mass., manufacturers of cotton warps, has been acquired by the Realty Operators Corp., Providence, R. I., for $100,000. J. Whitney Bowen, Fall River, Mass., has been elected president-treasurer of the new organization.

Alabama Textile Products Corp., Andalusia, Ala., will erect a new building and renovate the present building for expanded capacity.

Arkwright (S. C.) **Mills** are expending about $20,000 for sanitary facilities in all of the homes of the village.

Athens (Ga.) **Mfg. Co.,** has completed installation of new air-conditioning equipment in the new weave room, cloth room and slasher room. The installation was made by G. A. White & Co., Charlotte, N. C.

Bibb Mfg. Co., Porterdale, Ga., plans to install 240 additional looms. This plant manufactures fancy weaves, twines, and goods for the rubber trade. The new machinery will be installed in a new addition.

Bremen (Ga.) **Mills** plan construction of addition 40x40 ft. Additional machines will be installed.

Caldwell Cotton Mills Co., Hudson, N. C., has installed 3,000 long-draft spindles.

Carlton Yarn Mills, Inc., Cherryville, N. C., has completed installation of 57 humiducts, product of Bahnson Co., Winston-Salem, N. C.

Clara Mill, Gastonia, N. C., one of the Goldberg interests, has completed an addition to finishing department.

Cleveland Mill & Power Co., Lawndale, N. C., has recently built an addition which, according to President J. F. Schenck, is for the purpose of improving the quality of the yarn and not for increasing the output.

Commander Mills, Inc., Sand Spring, Okla., have begun erection of one-story addition, for which general contract recently was awarded to the Forner Construction Co., Tulsa. Cost estimated about $250,000, with equipment. J E. Sirrine & Co., Greenville, S. C., are architects.

Delite Fabrics, Inc., have bought the former American Thread Co. plant at Pawcatuck, Conn. President Alfred A. Gobeille of Delite expects to start operations there in June. It has operated in the plant of the Specialty Narrow Fabrics Co.

Glen Raven (N. C.) **Cotton Mills** have constructed new weaving unit; 50 additional looms will be installed.

Glenn Mfg. Co., Lincolnton, N. C., has recently expanded its dyeing department capacity by 50%.

Jewel Cotton Mills, Inc., Thomasville, N. C., has installed new machinery to increase production of combed yarns.

Kendall Co. plant at New Bedford, Mass., will close down in about two months and be disposed of.

Kenneth Cotton Mills, Walhalla, S. C., have awarded general contract to Townsend Lumber Co., Anderson, S. C., for one-story addition, reported to cost over $40,000. Charles W. Fant, Anderson, is architect.

Lincolnton, N. C. will soon have a new cotton mill organization. The old Wampum plant has been sold to new interests and has been re-equipped throughout. It is understood that W. L. Balthis, Gastonia, N. C., is the moving force behind it. The plant will

MILL PROFIT-AND-LOSS STATEMENTS

	1939	1938
Century Ribbon Mills	$140,304	−$238,358
Hartford Rayon Corp	81,577	−42,647
Real Silk Hosiery Mills	169,536	119,018
Propper-McCallum Hosiery Co	33,823	27,334
American Hosiery Co.	−84,138	.....
Adams-Millis Corp	553,163	535,634
Patchogue-Plymouth Mills Corp	184,240	−28,881
Strutwear Knitting Co.	82,345	27,118
Sidney Blumenthal & Co., Inc.	376,718	−823,621
Joseph Bancroft & Sons Co.	290,962	−48,047
California Cotton Mills Co	−4,761	−246,024
Mt. Vernon-Woodberry Mills	335,764	−159,138
Ludlow Mfg. Associates	1,238,733	180,608
New England Industries, Inc	−478,330	−1,537,661
Kendall Co.	934,043	98,166
Cosmos Imperial Mills	292,865	.....
American Hair & Felt Co.	376,987	−181,436

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The Barber-Colman "trident system" of transferring yarn packages from spooler to creel enables the spooler operator to move a maximum amount of material with a minimum of effort. Tridents carrying 15 cheeses each are simply SLID, as shown, from the trident truck to the transfer table.

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Eliminate errors and see that your tags, tickets, labels, etc., are attractively and legibly numbered the SPEED SET way. WRITE TODAY FOR FOLDER describing these new machines used in Cotton, Woolen, Hosiery, Knit Goods, and Dyeing and Finishing Plants.
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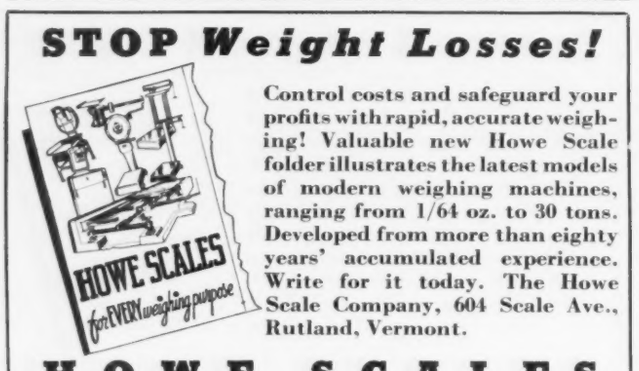
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have 15,000 spindles on combed cotton yarns 50s and over.

Monroe (Ga.) **Cotton Mills** have completed changing 85 spinning frames to Whitin long-draft.

Novelty Mills, Inc., Dalton, Ga., has begun construction of a new building to provide four times the space of present building; expected to be ready May 1.

Oakdale Cotton Mills, Jamestown, N. C., has installed a new Whitin Spira-whirl opening machine.

J. M. Odell Mfg. Co., Pittsboro, N. C., plans construction of a complete hydro-electric plant of 800 hp., including new water wheel and governor, generator and switchboard, head and sluice gates.

Pacific Mills, Boston, Mass., are spending $2,000,000 on improvements which will mean an annual reduction of $750,000 in operating expenses. Among other things the size of the print works at Lawrence will be cut in half (to 900,000 sq. ft. instead of 1,800,000) and it will run double instead of single shift.

Parkdale Mills, Gastonia, N. C., has completed construction of addition with 12,500 sq. ft. of floor space.

Queen Anne Mills, Ellenboro, N. C., plans resumption of operations under control of common stockholders. At a hearing in Shelby, N. C., March 23, proposals were put before U. S. Judge E. Yates Webb.

Randolph Mills, Franklinville, N. C., have installed a new hydro-electric plant.

Russell Mfg. Co., Middletown, Conn., will soon award contract to replace the unit destroyed by fire Feb. 27.

Springs Cotton Mills announce that the original addition to unit No. 1, Fort Mill, S. C., has been enlarged 50% and will provide work for many additional operatives. The addition measures 150x475 ft., and will be used for carding, spinning and weaving machinery.

Standard Cotton Products Co., Flint, Mich., has let general contract to August B. Johnson, Flint, for one-story addition. Cost about $35,000, with equipment.

Statesville (N. C.) **Cotton Mills** have installed 24 long-draft Whitin spinning frames and 2 high-speed Foster winders: also combination beam and package dyeing machinery from Gaston County Dyeing Machine Co.

Sunset Line & Twine Co., San Francisco, Calif., has purchased the Petaluma plant formerly of Belding-Heminway-Corticelli and will move thither. New location gives four times former floor space and added new equipment will be installed. L. E. Christenson is president and H. W. Johnson vice-president.

Taber Mill Corp., New Bedford, Mass., liquidation will proceed according to court order.

Washington Mills Co., Fries, Va., has revamped the entire lighting system, and installed 40 Whitin inter-draft roving machines, an Abington card-cleaning outfit and a Bahnson air-change unit.

Woodside Cotton Mills, Greenville, S. C., is modernizing its slasher room by installing three two-cylinder slashers, two cooking kettles, and one storage kettle.

Wool Mill News

Glencrest Woolen Mills, Inc., Maple St., Bellingham, Mass., recently organized with capital of 500 shares of stock, plans operation of a local mill. Patrick F. Hanlon is president, and Solomon Tarmy, treasurer.

Hamill Spinning Co., Philadelphia, Pa. Machinery and equipment of this company have been sold at a trustee's sale in bankruptcy to a number of buyers.

Livingston Worsted Mills, Holyoke, Mass., has installed 12 new Crompton & Knowles high-speed looms in the one-story building on South Street, occupied by Cornwall Mills. The looms replace some leased a year ago from the Farr Alpaca Co., which have been returned.

Macon (Ga.) **Textiles, Inc.,** an interest of Uxbridge (Mass.) Worsted Co., has let general contract to Daniel Construction Co., Anderson, S. C., for two-story addition, 120x120 ft. Cost over $80,000, with equipment. J. E. Sirrine & Co., Greenville, S. C., are architects and engineers.

Star Woolen Mills, South Pittsburg, Tenn., plans installation of additional equipment in local mill, recently established, including garnetting machines.

Western Canadian Woolen Mill, Vancouver, B. C., are being enlarged under direction of Czecho-Slovakian technical advice and capital.

Rayon and Silk Mill News

American Viscose Corp., Lewistown, Pa., has asked bids on general contract for alterations and improvements in local mill. Estimated cost re-

More Production

. . . and better production, too, is the result when your frames are equipped with Pawtucket Rings. To give your travelers a "turn for the better" install these better rings . . . now.

PAWTUCKET SPINNING RING CO.

(Subsidiary of Saco-Lowell Shops) CENTRAL FALLS, R. I.

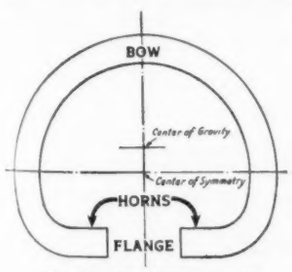
Vitritex finish

CUT OUT AND KEEP THIS INFORMATION FOR PERMANENT REFERENCE

This is number 2 of a series. Here you will find practical information of interest to users of rings

Spinning rings can be furnished in a wide range of diameters and flange sizes. The two most common flange sizes are No. 1 flange, .125-inch, and No. 2 flange, .156-inch. There is no hard and fast rule to determine the selection of the proper ring flange. It is possible to do equally well with any size flange within reason.

The advantage of the No. 1 flange over the No. 2 flange, if any, is in the use of a traveler which is heavier in section and has a probability of longer life. The traveler in the case of the No. 1 flange is thicker and somewhat narrower, and is thus less likely to damage the ring, as it will not present such a sharp edge to the flange after traveler wear has set in. The selection of the proper flange depends entirely on the preference and judgment of the spinner. What may be satisfactory in one mill may be exactly to the contrary in another.



The Parts of the Traveler

SIZES OF RING FLANGES

Flange	*Width*	*Outside diameter of ring would be*
No. 0	3/32"	3/16" larger than hole
No. 1	1/8"	1/4" " " "
No. 2	5/32"	5/16 " " "
No. 2½	11/64"	11/32 " " "
No. 3	3/16"	3/8 " " "
No. 4	7/32"	7/16 " " "
No. 5	1/4"	1/2 " " "
No. 6	9/32"	9/16 " " "
No. 7	5/16"	5/8 " " "
No. 8	11/32"	11/16 " " "
No. 9	3/8"	3/4 " " "

Saco-Lowell Shops, Boston, Mass.

PARAMOUNT Dual Heat Hosiery Finishing Machine

CREATING Incomparable Quality in Hosiery Finishing and Establishing Production Figures that are truly amazing, the Paramount Dual Heat Machine will revolutionize and simplify your hosiery drying and finishing methods.

Compare this Machine with your present equipment. You will find that it requires less square feet of floor space per dozen than any existing method of finishing; less steam consumption — heating is direct; less power — a one-quarter horsepower motor operates the entire machine; less investment per dozen — reasonably priced; less upkeep — built to render years of service; and production possibilities with quality work that cannot be challenged.

Machines will pay for themselves in direct savings to you.

WRITE FOR DESCRIPTIVE BOOKLET

Paramount Service With All Paramount Products

Paramount Textile Machinery Company

Main Sales Office

538 S. Wells St., Chicago, Ill.

ported over $50,000. Ballinger Co., Philadelphia, Pa., is architect and engineer.

Anthracite Silk Throwing Co., Wyoming, Pa., has taken over the former mill of the Barclay Throwsters, Inc., near Wilkes-Barre, Pa., airport, and has begun its operations as a branch mill.

Bonita Ribbon Mills has started up in the building which formerly housed a silk mill at Brewton, Ala. There are 52 looms. Horace Levy and Irving Mettzer, Stroudsburg, Pa., are owners.

Burlington (N. C.) **Mills Co.** has underway a program of expansion which includes additional 30,000 sq. ft. of floor space at the Vinton, Va., unit, for the installation of additional rayon looms; and the lease of another plant in Greensboro, N. C., for finishing full-fashioned hosiery. The lease carries an option for the purchase.

Carter Fabrics Corp., South Boston, Va., will begin capacity production June 1 on rayon fabrics. The company will employ approximately 500 persons and will produce 1,000,000 yds. a month.

Cascade Rayon Mills, Mooresville, N. C., has constructed three additions to its plant.

Celanese Corp. of America, Pearisburg, Va., has awarded contract to Warren Construction Co., Narrows, Va., for construction of a building 40x60 ft.

Henry Doherty Silk Co., Paterson, N. J., has closed down for lack of business.

J. B. Dove, Atlanta, Ga., is head of project to operate new rayon mill at Danville, Va., where arrangements have been made for lease of one-story building on Newton St.

E. I. du Pont de Nemours & Co. is reported to be showing further interest in new plant sites, one being Pulaski County, Va., and another being Nashville, Tenn.

Kahn Ribbon Co., Attalla, Ala., was destroyed by fire at an estimated loss of $125,000. Benjamin Kahn, owner of the company, has announced plans to rebuild the plant.

Industrial Rayon Corp., Cleveland, Ohio, will take bids soon on general contract for new additions to mill near Painesville, Ohio, to expand present capacity about 50%, including basement under present spinning room, 80x225 ft.; one-story top addition to spinning room, 90x455 ft.; top addition to chemical preparation building and other structures. Cost estimated about $4,000,000, with machinery, a considerable part of which will be supplied by Rayon Machinery Co., Cleveland, an associated interest. Proposed to begin construction in spring. Wilbur Watson & Associates, Cleveland, are engineers. Award for excavations has been made to the National Construction Co., Cleveland.

Roanoke (Va.) **Mills Co.** has let contract to B. F. Parrot, Roanoke contractor, for construction of a 30,000-foot addition to its unit at Vinson, suburb of Roanoke. This is a unit of the Burlington Mills Corp. Half of the addition will be used for warehouse, and the other for 150 to 200 looms, and for the rearrangement of machinery.

Schwarzenbach Huber Co., New York, N. Y., is concluding arrangements for construction of new one-story mill at Luray, Va. Initial unit will total about 30,000 sq. ft. of floor space. Proposed to begin work in April. Cost reported over $60,000, with equipment.

S. Slater & Sons, Inc., Slater, S. C., rayon fabrics, will install 128 new looms in an expansion now underway.

Knitting Mill News

Athens (Ala.) **College** has been presented with 17 hosiery machines by an unannounced party, Dr. E. R. Naylor, president, announces. They are to be installed in the new hosiery mill at the college.

P. J. Brown, president of Brown Hosiery Mill, Windy City, N. C., has established a new finishing mill at Hickory, N. C.

Cooksville Hosiery Mill, Vale, N. C., has moved to larger quarters and 22 hosiery machines are now operating in the new building. Hoyt Rudisill is proprietor of the mill.

Cordell Hosiery Corp., Greensboro, N. C., has recently been chartered with authorized capital of $100,000.

Cumberland Homesteads, Crossville, Tenn. Establishment of an $110,000 cotton spinning and knitting mill at the Cumberland Homesteads, Farm Security Administration project, has been proposed to Marion Powell, secretary-treasurer of the Cumberland Co-Operative Co.

Durant (Miss.) **Mfg. Co.** has recently installed six additional hosiery machines and auxiliary equipment. This is one of the plants established under the White "BAWI" program.

Dandridge, Tenn., citizens have bought a lot and

$12,000 CAME WALKING IN THE DOOR

AN ACTUAL EXPERIENCE OF ONE PLANT THAT CALLED IN A C.P.P. TECHNICAL MAN

"A Colgate-Palmolive-Peet man visited our plant and made a careful survey of our rayon processing formula. He said he thought it possible to reduce processing costs.

"On his advice, we ordered 25 barrels of his product for a trial run. We felt this quantity would provide a fair test of his suggestions in processing our rayon fabrics.

"We processed some 750,000 yards of goods with the new C.P.P. formula—and found soap costs were down 30% to 35%. This is an actual yearly saving of about $12,000.00."

C. P. P.'S FREE CONSULTING SERVICE MAY BE ABLE TO SAVE YOU MONEY! ASK YOUR C. P. P. MAN TODAY!

This is an actual case history. It is just another example of how quality soaps plus proper application can reduce costs.

No matter what your processing requirements may be, in the complete line of C. P. P. products you'll find washing and wetting agents to exactly fit your own special needs.

C.P.P. processing agents in most cases cost less to use than many so-called "special" products because of the volume in which they are produced. Ask your C.P.P. man for full information. Or write direct to us—no obligation, of course.

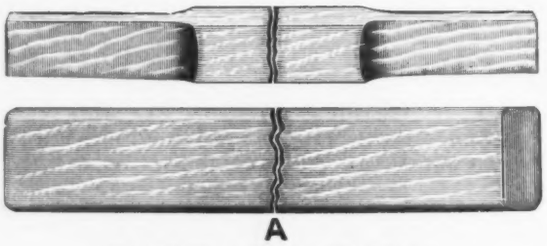
COLGATE-PALMOLIVE-PEET CO.

INDUSTRIAL DEPT., JERSEY CITY, N.J.

ADVERTISING PAGES REMOVED

RYERSON CERTIFIED STEELS

Large Stocks... Uniform High Quality... Immediate Shipment... Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structurals, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes and Fittings, Mechanical Tubing, Rivets, Bolts, Nuts, Washers, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.



A
DYE STICKS

Since 1900 we have made high quality true-form oven-seasoned dye sticks for all standard machines. We can fill your needs today to meet any requirement. Write

FRANK BAILEY Cedar Brook, N. J.

IT IS REALLY NEW!

THE
CARHART
PRECISION KNITTER

Knitting Arts Exhibition

Booths 404–405

W. C. LIPE, INC.

Syracuse, N. Y.

will be guarantors on the cost of a $7,500 building to house a hosiery mill.

Delaware Hosiery Mills, Inc., Laurel, Del., have been organized with capital of $100,000, to operate a local mill. Incorporators include Milton Bernstein and Harold Kretz, Laurel.

Gardiner-Waring Co., Florence, Ala., has recently installed 14-cut latch-needle machines which steps up its underwear production considerably.

Holeproof Hosiery Co., Milwaukee, Wis., will spend $120,000 for new equipment in 1940, and $100,000 additional in 1941.

Leininger Knitting Mills, Mohnton, Pa., will award contracts soon for construction of a large addition to its boiler house and power plant. Luke A. Lutz is president.

Magnet Mills, Inc., Clinton, Tenn., has purchased new equipment for 1940 expansion program, including 51-gauge Reading machines.

McCauley Hosiery Mills, Inc., Statesville, N. C., has been chartered and will engage in the manufacture of hosiery.

Phoenix Hosiery Co., Milwaukee, Wis., will install about $100,000 worth of new high-speed machinery in 1940.

Prewett Hosiery Mill, Dallas, Ga., has discontinued business and machinery has been sold to the E. W. Babb Mill.

Rathbun Knitting Co., Woonsocket, R. I., sold its stock and machinery at auction March 5.

Renfro Hosiery Mills Co., Mt. Airy, N. C., is building addition to its finishing plant to accommodate added package dyeing equipment.

Seneca Knitting Co., Seneca Falls, N. Y., has established a new department to manufacture knitted cloth for topcoats, overcoats and women's coats. Lewis Mehler is in charge of this department.

Standard Hosiery Mills, John Shoffner, president, Burlington, N. C., announces resumption of operations of the full-fashioned dyeing and finishing department, discontinued four years ago.

Van Raalte Co. has an extensive expansion program underway at Blue Ridge, Ga., including an addition to plant and installation of new machinery to cost approximately $200,000.

Vance Hosiery Mills, Inc., Henderson, N. C., recently organized, have awarded general contract to C. L. Carter Lumber Co., Henderson, for one-story mill, with main unit, 42x52 ft. Plant will specialize in men's seamless hose, with initial capacity of about 200 doz. pairs per day. Twenty Scott & Williams machines will be installed. New company is headed by James W. Jenkins and R. C. Gary, Henderson.

Warlong Glove Co., Conover, N. C., is making extensive improvements. All machines are being equipped with individual motors at cost of several thousand dollars.

Processing Plant News

Cretona Dye & Print Works, Clifton, N. J. Equipment has been bought by Consolidated Products Co., Fairlawn, N. J., and is being offered at private sale. Print plant has been leased to Martin Wiener Co. and dye buildings are offered for sale or rent by RFC.

Dixie Mercerizing Co., Chattanooga, Tenn., is constructing an addition which will cost $55,000.

Georgia-Kincaid Mills, Griffin, Ga., dyehouse will soon be completed. J. E. Sirrine & Co., Greenville, S. C., is the engineer, and the power and lighting system is being installed by J. M. Clayton, Atlanta, Ga.

Marshall Field & Co. will move all dyeing work from the mill in Spray, N. C., to its new plant in Draper, N. C.

Ideal Dyeing & Printing Co., Paterson, N. J., has been organized by John Grossgebaurer, president, and N. C. Willocks, secretary-treasurer. Plant will handle narrow fabrics.

Lindoway Piece Dye Works, 69 East 11th St., New York, has been organized by Philip Martinella.

Reliance Piece Dye Works, Paterson, N. J., founded 51 years ago as the Bamford Bros. Silk Mfg. Co., and still headed by members of the Bamford family, is closing down and will liquidate.

Southern Bleachery & Print Works, Taylors, S. C., have awarded general contract to C. M. Guest & Sons, Anderson, S. C., for one-story top addition to main mill, 100x300 ft., reported to cost close to $125,000, with equipment. J. E. Sirrine & Co., Greenville, S. C., are architects and engineers.

Weehawken (N. J.) Piece Dye Works, Inc., have begun modernization and improvement in industrial property on Hackensack Plank Rd., recently acquired for a new mill. Work will cost close to $50,000.

Textile World's GUIDE TO EXHIBITS

at the Knitting Arts Exhibition

COMMERCIAL MUSEUM, PHILADELPHIA, APRIL 15–18, 1940

Textile World's Guide to the

KNITTING ARTS EXHIBITION

DETAILED DESCRIPTIONS of the exhibits at the 36th Annual Knitting Arts Exhibition, Philadelphia, April 15-18, are given on this and following pages.

Aberfoyle Mfg. Co., Philadelphia. Booths 307-308, 321-322, 332-333. Cotton yarns. Rep.: J. P. Holt, E. L. Dale, G. W. Herrick, Jr., J. F. McCrudden, L. A. Stead, E. J. Neal, J. A. Holt, W. T. Galey, 3rd, C. D. Gott, W. T. Cheatham, W. C. Brown, W. H. Crenshaw, R. W. Yeabsley, J. S. Kenrick, E. F. Golden, F. W. Hancock, Jr., J. J. Neil, F. G. Miller, J. R. Kenworthy, N. L. Hill, H. M. Detwiler.

Adelphia Textile Co., Philadelphia. Booth 376. Resist-dyed yarns, seaming and looping threads, covered rubber. Rep.: James T. Hunter, Edw. B. Steinmetz, Clarence Evans.

Allentown Bobbin Works, Inc., Allentown, Pa. Booth 217. Line of bobbins and spools for silk and rayon industry, including latest in large package equipment. Rep.: Henry W. Mack, Harold S. Barnes.

Aluminum Co. of America, Pittsburgh, Pa. Booths 446-447. Alcoa aluminum products used in knitting and other textile fields. Rep.: C. Braglio, R. C. Bradbury, H. A. Faisst, E. C. Foster, W. T. Mitman, D. M. Johnston, W. R. Bushnell, R. E. Palmer, G. A. Bibens, C. J. Sheehan, R. Beck, C. A. Yeaton, D. J. McNulty, H. J. Fahrney, A. B. Wilber, J. B. West, A. C. Cooper.

Amalgamated Chemical Corp., Philadelphia. Booths 23-24. Textile oils, soaps, softeners, finishes, including new resin finish for hosiery. Rep.: Harold B. Dohner, Robert A. Bruce, Francis T. Quinlan, John T. McGrogan, John M. Jester.

American Bemberg Corp., New York. Booths 279-280, 289-290. Knitted fabrics made of Bemberg rayon. Rep.: T. Wood, H. A. Chapell, T. H. Johnson, C. K. Seid, H. Z. Heuston.

American Enka Corp., New York. Booths 379-380, 401-402. Rayon yarns. Rep.: O. F. Marks, E. W. Martin.

American Magnesium Corp., Pittsburgh, Pa. Booths 446-447. Mazlo magnesium products used in knitting and other textile fields. Rep.: W. C. Harvey, H. Menking, J. Colin Smith.

American Mutual Liability Insurance Co., Boston. Booth 179. Workmen's compensation and other forms of liability insurance. Rep.: E. J. Kelly.

American Textile Engineering, Inc., Kearny, N. J. Booth 202. Latest-model yarn conditioning machine for cones and packages: psychrometers.

American Viscose Corp., New York. Booths 309-310, 319-320. Rayon and Vinyon yarns. Rep.: M. H. Morse, T. H. Andrews.

American Vitos Co., Inc., New York. Booth 355. Hosiery mending equipment in operation. Rep.: A. de St. Maurice.

American Wool & Cotton Reporter, Boston. Booth 9. Textile publishers.

American Yarn & Processing Co., Mount Holly, N. C. Booths 388-389, 394-395. Durene yarns and garments made therefrom. Rep.: Edwin Hutchison, E. F. Redding, T. H. McKinney, Chas. M. Lowe, E. J. Holbrook, and others.

Edward R. Ammon, Inc., Reading, Pa. Booth 37. Hosiery inspecting devices, accessories for improved systems of quick defect corrections. Rep.: Edward R. Ammon.

Joseph Amon, Rahway, N. J. Booth 282. Hosiery-mill equipment and accessories, including snarl eliminators and stainless steel tension rings. Rep.: Joseph Amon, R. H. Therrell, L. F. Ott.

Amsco Packaging Machinery, Inc., Long Island City, N. Y. Booth 43. Machine for wrapping hosiery and other textiles in cellophane or other packaging materials. Rep. S. R. Watson, E. E. Messmer, P. K. Keenan.

Arrow Needle Co., Manchester, N. H. Booth 11. Knitting needles. Rep.: Jack Forstadt, Donald A. McDonnell, George L. Heaton, Jr.

Atlantic Rayon Corp., Providence, R. I. Booths 195-196. Yarns and fabrics handled by company's throwing and dyeing departments. Rep.: T. L. Power, R. Lyons, C. Bellows, L. R. Buckner, E. Farley, C. B. Burns.

Atwood Machine Co., Stonington, Conn. Booths 270-272, 297-299. New 5B machine for silk and rayon doubling and twisting, headless package twister, Uni-Rail twister. Rep.: F. R. Hoadley, W. M. Fraser, T. Dewhurst, R. F. Lenihan, W. Paulhamous, J. R. Breen, F. Sails.

Benjamin Electric Mfg. Co., Des Plaines, Ill. Booths 421-423. Fluorescent-lamp lighting units for general and local lighting. Rep.: R. W. Corwin, W. McCouch.

Boger & Crawford, Philadelphia. Booths 273-274, 295-296. Fine lisle stockings made from B&C Coronation yarns. Rep.: Robert C. Boger, Ernest T. Boger, Alfred H. J. Boger, Harry H. Haff, Thomas F. Haigh, John J. Nevins, William R. Rietheimer.

Boshamer & Co., Philadelphia. Booth 40. Cotton yarns. Rep.: Henry M. Boshamer, Abe Besser, Howard Nekervis, Harry Graeff, Cary C. Boshamer.

Bristol Co., Waterbury, Conn. Booth 363. Recording and controlling instruments for dyeing, bleaching, sizing, slashing, etc. Rep.: F. W. Borchers, D. C. Sanford, S. E. Gewin, C. Webber, F. A. Faust, J. H. Ferguson, C. A. Mabey.

Bruegger Winding Co., Philadelphia. Booths 164-165. High-speed, spindleless winder; skein and rayon cake swifts. Rep.: Albert Bruegger, William A. Dobler.

Edward G. Budd Mfg. Co., Philadelphia. Combined exhibit with Imperial Rayon Machine Corp., which see.

H. W. Butterworth & Sons Co., Philadelphia. Booths 64-66. Tube Tex double processor, package dyeing machine, package rounding machine, laboratory padder, Stokes-Butterworth staple fiber cutter. Rep.: Harry W. Butterworth, Jr., DeHaven Butterworth, John H. S. Spencer, Wm. E. H. Bell, Wm. F. Hennessy.

Cannon Mills, Inc., Philadelphia. Booths 390-391. Cotton yarns. Rep.: Harold E. Aken, C. Vernon Albright, J. Calvin Bartlett, Henry Crumbliss, 3rd, Chas. H. Fenn, Martin B. Foil, Wm. Helriegel, 3rd, Chas. F. Peffer, Lynn W. Davies, Preston H. Dalglish.

Caron & Patterson, Chicago. Booth 351. Yarns. Rep.: C. M. Patterson.

Celanese Corp. of America, New York. Booths 206-207, 212-213. Celanese rayon yarns and knitted fabrics. Rep.: John P. Holmes, K. C. Loughlin, George Kohn, Max Wohl, J. C. Cook, Howland Wentworth.

China Grove Cotton Mills Co., China Grove, N. C. Combined exhibit with Southern Mercerizing Co., which see.

Clover Leaf Mfg. Co., Honesdale, Pa. Booth 25. Bobbins, spools, reel caps, pin boards, steaming crates, cone gages, and redraw brackets. Rep.: R. P. Bennett, W. A. Spencer, Jr.

Cocker Machine & Foundry Co., Gastonia, N. C. Booths 67-72. High-speed warper and creel for tricot knitting machine beams. Rep.: D. L. Friday, John C. Bodansky, E. K. Whitener, Mrs. Geo. B. Cocker, T. F. Suggs.

Coleman & Co., New York. Booth 383. Factors. Rep.: Albert Witz.

Continental-Diamond Fibre Co., Newark, Del. Booth 174. Roving cans, receptacles, conditioning trucks, bobbins,

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The 36th Annual Knitting Arts Exhibition will open Monday, April 15, in the Commercial Museum, Philadelphia. It will continue through Thursday, April 18. Associated events include:

National Association of Hosiery Manufacturers, annual meeting, Wednesday afternoon, April 17; officers and directors will be elected.

Underwear Institute, annual meeting, 9 a.m. Thursday, April 18; followed by luncheon at which Col. Phillip B. Fleming, wage-hour administrator, will speak.

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TEXTILE WORLD will maintain headquarters in booths 114—117 at the Knitting Arts Exhibition. Cordial invitation is extended to visitors to make this booth their business headquarters while in Philadelphia.

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reels, pirns; textile machinery parts manufactured from vulcanized fiber, molded Bakelite and synthetic-resin plastics. Rep.: N. N. Wright, F. K. Simons, F. L. Cooper, Wm. A. Krebs, W. R. Elsenhans, F. T. Cantwell, S. J. Turner, T. R. Silk, N. W. Sieber, C. L. Simmons.

Charles Cooper Co., Inc., Bennington, Vt. Booths 364-365. Latch and spring needles; samples of plain and patterned fabrics for underwear and outerwear. Rep.: W. T. Barratt, John J. Hayes, Raymond Rogers.

Cotton, Atlanta, Ga. Booth 83. Textile publishers.

Crawford Mfg. Co., Inc., New Brunswick, N. J. Booth 338. Automatic and electric stop-motions for knitting machines. Rep.: Alfred Crawford.

Cross Cotton Mills Co., Marion, N. C. Booths 199-200. Double carded and combed knitting yarn on cones, featuring bleached-base pastel shades. Rep.: I. I. Davis, Eugene Cross, Jr., S. R. Cross.

J. D. Cunningham, Philadelphia. Booth 36. Carded and combed cotton yarns. Rep.: J. D. Cunningham, Helen M. Malyszka, George W. Stowe, R. S. Ferguson.

Currier & Co., Inc., New York. Booth 392. Carded and combed, natural and dyed cotton yarns. Rep.: S. E. Fulton, Paul Davenport, F. W. Sundberg.

Darlington Fabrics Corp., New York. Booths 92-95. Darleen elastic knitting yarns for hosiery, knitted sportswear, and beachwear. Rep.: John Thomas Miller, Fred Schloss.

Davison Publishing Co., Ridgewood, N. J. Booths 169-170. Textile publishers.

Dixie Mercerizing Co., Chattanooga, Tenn. Booths 245-248. Knitting yarns. Rep.: G. R. West, Jr., J. B. Frierson, Jr., A. K. Johnson, E. R. Kimball, D. O. Blevins, S. L. Diggle, Fred Lemmond, F. W. Frank, A. G. Symonds, E. M. Townsend, T. J. Tighe, G. A. Dalglish.

Dubied Machinery Co., New York. Booths 408-409. Links-and-links knitting machine equipped for duplicating hand embroidery, double-lock jacquard machine with special appliance for knitting narrowed garments. Rep.: G. Sandri, E. Hafner.

Duffy Silk Co., Buffalo, N. Y. Booths 396-397. Thrown silk on cones. Rep.: Paul Hemmerich, C. Walter Seidel, Carl A. Lorenz, Charles G. Duffy, Jr.

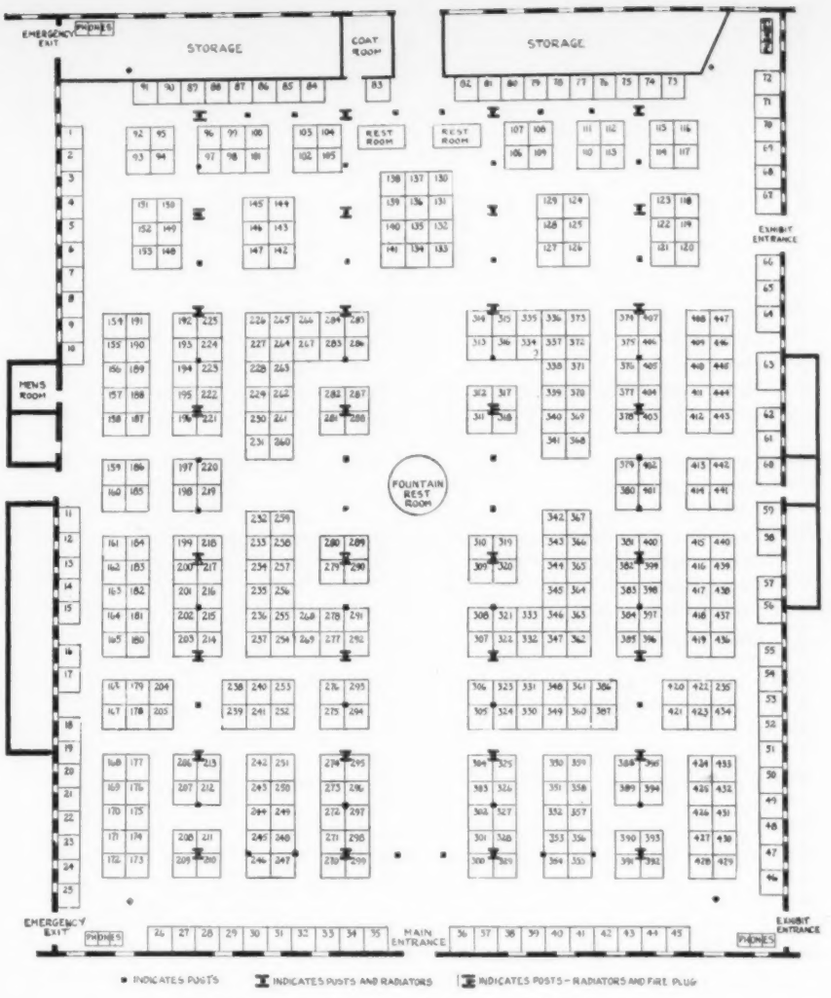
Duplan Silk Corp., New York. Booths 51-52. Commission throwing. Rep.: George Friedlander, Wm. S. Wheeler, Jr., H. H. Cannon, R. H. Griffith, G. E. Ward, D. L. Ryan, A. A. Hardeman.

E. I. du Pont de Nemours & Co., Inc., New York. Booths 230-231, 260-261. Rayon yarns. Rep.: E. C. Harrington, George S. Demme, David B. Hardin, John W. Tinker.

John A. Eberly, Reading Pa. See Franklin Needle Co.

Ewing-Thomas Corp., Chester, Pa. Booths 38-39. Mercerized cotton yarns, thrown silk. Rep.: James L. Rankin, Henry A. Stafford, Joseph B. Pope, C. Vernon Albright, J. C. Bartlett, C. F. Fenn, Preston H. Dalglish, Henry Crumbliss, Martin B. Foil, Wm. J. Crummer, David Thomas, 2nd, George E. White, Wm. Helreigel, Charles F. Peffer, Jacob Meschter.

Fairchild Publications, New York. Booths 80-82. Textile publishers.



Floor plan for Knitting Arts Exhibition

W. F. Fancourt & Co., Philadelphia. Booth 249. Hosiery finishing products, and hosiery finished with these materials; also finishes developed for Nylon hosiery. Rep.: W. F. Fancourt, Jr., W. F. Fancourt, 3rd, Charles T. Harvey, Howard A. Virkler, Claude G. Wolff.

Morton Feldman, Inc., Mount Holly, N. J. Booth 250. Thrown silk. Rep.: Manuel Tannenholz, Morton Feldman.

Filatex Corp., New York. Booth No. 7. Covered elastic yarns. Rep.: H. B. Ketchum, H. F. Stolzenberg, E. F. James, H. W. Kettlety, R. H. Styles, G. E. Ward, H. C. Simpson, R. E. Jessen.

J. A. Firsching & Son, Utica, N. Y. Booth 359. Cloth-cutting equipment. Rep.: J. A. Firsching, Sr., R. A. Firsching.

Fletcher Works, Inc., Philadelphia. Booths 172-173. Double-deck rayon twisters, Duplex doubler-twister, streamlined extractor. Rep.: O. W. Schaum, R. J. Bartholomew, C. W. Moore, F. Schaum, W. H. Rometsch, Jr., F. W. Warrington, H. N. Rahn, W. W. Egee.

J. B. Ford Sales Co., Wyandotte, Mich. Booth 352. Specialized alkalis for textile mills. Rep.: H. M. Flack, H. E. Moyer, W. B. Davison.

Foster Machine Co., Westfield, Mass. Booths 346-347, 362. Cone and tube winding machines, for use with silk, rayon, and cotton. Rep.: D. W. Bridgman, T. E. Connor, H. A. Cadle, J. E. Wood, H. E. Swift.

Franklin Needle Co., Franklin, N. H. Booths 204-205. Knitting and sewing-machine needles; jacks, sinkers, points, porcelains, scissors and other mill specialties. Rep.: George L. Hancock, John A. Eberly, Victor L. Eshelman, Goodwill MacFadyen, Albert L. Eshelman, D. H. Wyle.

Franklin Process Co., Providence, R. I. Booths 424-425. Yarns and fabrics containing yarn dyed by this company. Rep.: W. A. Traver, C. R. Ewing, B. S. Phetteplace.

Friedberger-Aaron Mfg. Co., Philadelphia. Booth 21A. Elastics, edgings, and braids for underwear and hosiery. Rep.: Guy C. Tanner, Joe Stone, J. W. Brown, Joseph Speitel, George Miller, Bill Barnhardt, John Decker.

Lamp Department, General Electric Co., Nela Park, Cleveland. Booths 183-184. Fluorescent lamps and other new developments in light sources and lighting technique. Rep.: Al Reas, O. F. Haas, G. A. Taylor, F. S. Hutter, C. M. Knapp, S. E. Keemer.

General Hosiery Motor Mend Corp., New York. Booth 244. Vanitas electric hosiery-repairing machine. Rep.: Chas. E. Mandelick.

Globe Dye Works Co., Frankford, Pa. Booth 63. Dyed cotton and mercerized yarns. Rep.: H. T. Greenwood, Jr., Paul Greenwood, George T. Moore, William Goodis, Ferd V. Traut, William Hilbert, W. J. Henne.

Grand Rapids Textile Machinery Co., Grand Rapids, Mich. Booths 159-

160, 185-186. Inclosed stainless-steel scouring and dyeing machine for handling vat, naphtol and developed colors; improved inspection machine for tubular or flat print cloth; calender and folder for finishing tubular knitted fabrics. Rep.: W. H. Shields, W. F. Moon, M. F. Shields.

Grove Silk Co., Scranton, Pa. Booths 12-13. Thrown silk and hosiery. Rep.: W. T. Cheatham, C. B. Asay, George J. Schautz, W. L. Schautz, A. G. Schautz, George J. Schautz, Jr.

Gulf Oil Corp., Philadelphia. Booth 8. New type spindle oils. Rep.: Joseph Marshall, A. E. Townsend.

Gunze Silk Corp., New York. Booth 60. Raw silk. Rep.: Bert Berenson.

Hampton Co., Easthampton, Mass. Booths 238-241. Cotton and rayon yarns. Rep.: F. B. Handy, B. H. Rehbaum, F. W. Kingsley, B. J. Miller, Walter T. Forbes, C. W. Causey, Jr., H. A. Florsheim, Wm. P. McCulloch, R. A. Bliss, A. B. Rogers, R. B. King, J. S. Blodgett.

Oscar Heineman Corp., Chicago. Booths 344-345. Raw and thrown silk and commission throwing. Rep.: John H. Brine, Leo Wotan, Frank E. Morey, Donald G. Brewster, Claude D. Gott, Nettleton P. Murphy, William J. Bieberle.

Hellwig Silk Dyeing Co., Philadelphia. Booth 281. Direct-dyed and resist-dyed, weighted and pure-dye silk; rayon and novelty yarns; hosiery, neckties, sweaters, and piece goods made therefrom. Rep.: R. M. Gutekunst, H. C. Gutekunst, G. A. Smith.

Hemphill Co., Pawtucket, R. I. Booths 124-129. Banner knitting machines as follows: 19-step wrap-stripe machine, knitting half hose with transferred genuine rib top; 8-step wrap attachment machine (18 color), knitting half hose with Banner-lastic top; automatic true-rib self-topping machine, with lxl lay-in elastic equipment for half hose; automatic wrap and elastic machine, set up for anklets; plain machine with float thread patterning equipment for leg and foot.

Combination 8-step wrap-stripe and 12-step reverse plating machine to knit half hose with transferred genuine true-rib top; split-foot machine, to knit half hose with Banner-lastic top. Rep.: Alfred L. Hutton, Jr., Joseph D. Hobson, Roy F. Lovell, George McDowell, James McDowell, Hoyt G. Cross, Robert Quinlan, Arthur Pelkey, Thomas J. Tighe.

John W. Hepworth & Co., Philadelphia. Booth 225. Looping machines. Rep.: Geo. Keyser, J. J. Sander.

Herst Sales Co., New York. Booth 50. Machine for attaching labels without sewing. Rep.: L. Oskow.

Hoffner Rayon Co., Philadelphia. Booths 223-224. Rayon yarn and garments made from same. Rep.: Jos. P. Hoffner, Jos. C. Hoffner, John G. Hoffner, Frank M. Shannonhouse, Jr.

Alfred Hofmann, Inc., West New York, N. J. Booths 342-343, 366-367. Samples of single-unit hosiery; needles, points, and similar supplies. Rep.: Alfred Hofmann, Carl E. Weinberg, Peter Schoenster, Hanns Wirth.

Hooker & Sanders, Inc., New York. Booth 256. Cotton yarns. Rep.: R. J. Hooker, J. P. Sanders, W. A. Popp, F. K. Goldey, M. E. Roper, B. M. Harrington, W. F. Durkin, F. L. Brayton, J. L. Gray, Jr., J. L. Gray, Sr., W. E. Cunningham, G. M. Brinn.

Hosiery Patents, Inc., Lansdale, Pa. Booths 158, 187. Flexy carriers, spring tubes, and verge plates; including new spring tube recommended for use with Nylon yarn, and new verge plates for use on German-type full-fashioned machines. Rep.: Benjamin Subin, Jos. Haines, Jr., Frank G. Weisbecker, James DeStephen.

E. F. Houghton & Co., Philadelphia. Booths 427-428. Silk soaking oils, degumming agents, dyebath assistants, detergents, rayon oils, soaps, lubricants, needle-rust preventives, knitting-machine oils. Rep.: C. B. Kinney, H. E. Sanson, W. H. Brinkley, D. C. Miner, H. H. Kirkpatrick, H. C. Roberts.

Howard Bros. Mfg. Co., Worcester, Mass. Booth 442. Samples of card, brush and napper clothing, and dryer sheets. Rep.: Harry C. Coley, Harold S. Bolger, Joseph A. Bolger, Ralph C. Shorey.

Howes Publishing Co., New York. Booths 156-157, 188-189. Textile publishers.

Hyde-Rakestraw Co., Philadelphia. Booth 441. Cotton yarns. Rep.: J. L. Rakestraw, Frank Torchiana, Albert Wiessler, C. S. Clark.

Hygrade Sylvania Corp., Salem, Mass. Booth 178. Incandescent and fluorescent lamps, including color-matching types; fluorescent lighting fixtures. Rep.: Al Hopkin, B. C. White, R. Delaney.

Imperial Rayon Corp., Gloucester, N. J. Booths 190-191. Cuprammonium rayon, in process of manufacture, and on cones; also knitted and woven fabrics made therefrom. Rep.: Paul Zens, P. E. Harrison, C. N. Ackroyd, S. Gross, Geo. V. Green, W. H. Barnhardt, Paul Zens, Jr., Martin Glynn, Jr., G. A. Mix, John T. Bucher, S. Gordon Watts, Edward Horswood.

Industrial Dryer Corp., Stamford, Conn. Booths 14-15. Latest type H-W conditioning and twist-setting machines, featuring full automatic control. Rep.: C. M. Kitzmiller, H. B. Foulder, F. W. Caesar, G. D. Millspaugh, I. E. Norvig, J. R. Tutt.

International Nickel Co., Inc., New York. Booths 16-17. Mill and fabricated forms of Monel for use in dyeing and other wet-processing operations. Rep.: E. A. Turner, C. J. Bianowicz, J. W. Carey.

Interstate Textile Equipment Co., Charlotte, N. C. Booth 79. Extractors, dyeing machines, industrial chairs, and other hosiery-mill equipment. Rep.: Morris Speizman, Ted Valenstein.

Loyal T. Ives Co., New Brunswick, N. J. Booths 192-193. Spring-beard needles, sinkers, jacks, and other knitting-machine parts. Rep.: Theodore Whitlock, Everett A. Quint, Harry W. Thomas, William W. Heath, Raymond Bergen.

Jacquard Knitting Machine Co., Inc., Philadelphia. Booths 142-147. Circular jacquard knitting machines, together with cloth and garments made on these machines. Rep.: Harry Albertman.

Johnston Mills Co., Charlotte, N. C. Booths 287-288. Cotton yarns. Rep.: J. W. Ferguson, R. M. Bechtel, Wm. J. Yates, Wm. B. Phelps, Jr., Donald Jones, F. N. Belk, J. S. Wilcox.

Jordan Mills, Inc., Columbus, Ga. Booth 357. Colored yarns of cotton and cotton-rayon blends. Rep.: R. Curtis Jordan, Jr.

Kahn & Feldman, Inc., New York. Booths 214-215. Thrown silk. Rep.: C. Walter Seidel, D. O. Blevins, C. W. Causey, Jr., G. N. Frank, Nathan Lewis, Joseph O'Donoghue, R. A. Adams, Jack Kahn.

Samuel Kassow Co., Philadelphia. Booth 53. Hosiery tram on cones. Rep.: Samuel Kassow, Jack Kassow, Peter P. McEvoy.

Katakura Corp., New York. Booths 434-435. Raw silk. Rep.: M. Hanaoka, S. Usui, E. Yano.

Kaumagraph Co., New York. Booths 102-105. Latest developments in hosiery identification, attractive packaging, and accessories; Prestomark labels, accessories for application of dry transfers. Rep.: George M. Porges, S. W. Porges, A. F. Dooley, J. L. Reeves, H. A. Keech, David O. Blevins, W. P. Raiford.

A. Kimball Co., New York. Booth 180. Kimflex tickets for hosiery marking, together with machine for imprinting same. Rep.: F. N. Brady, T. R .Spencer.

Joseph Klumpp Co., Philadelphia. Booth 426. Cotton yarns. Rep.: G. L. Maveety, R. H. Dillmore, W. D. Brenckman, W. B. Longgley, Charles B. Rapp, Thomas Park, J. J. Klumpp.

Knit Goods Publishing Corp., New York. Booth 91AA. Textile publishers.

Laconia Needle Co., Laconia, N. H. Booth 216. Latch needles, in both screw-rivet and rivetless types. Rep.: Archie B. Sanborn, Hobart D. Sanborn, Charles B. Paulus, Walter H. Groat.

W. T. Lane & Bros., Inc., Poughkeepsie, N. Y. Booth 354. Canvas baskets, trucks, shipping hampers, and truck casters. Rep.: R. T. Lane.

R. K. Laros Silk Co., Bethlehem, Pa. Booths 58-59. Commission throwsters. Rep.: R. K. Laros, G. A. Fenton, S. F. Burtis, J. L. Gross, P. Wilson, J. M. Harris, H. Huguenot.

Laurel Soap Mfg. Co., Inc., Philadelphia. Booths 210-211. Hosiery, underwear, yarn, and piece goods finished with company's products. Rep.: C. E. Bertolet, Wm. H. Bertolet, Jr., A. Henry Gaede, W. R. Sargent, C. C. Hagelgans, E. W. Seasongood.

Leatex Chemical Co., Philadelphia. Booth 42. Chemical specialties for textile industry. Rep.: John M. McChesney, John F. Rieder, Louis A. Gregg, Maurice M. Guertin, Chas. L. Hammell, Herbert Higginbotham, Claude I. Ruth, Jr., Louis Soistmann, Robert R. Willgoos.

Percy A. Legge, Philadelphia. Booth 235. Worsted and mohair yarns; also blends of wool, rayon, mohair, angora, and cashmere; specialty yarns, Controlastic yarn. Rep. Chas. W. Neeld, Jr.

Lestershire Spool & Mfg. Co., Johnson City, N. Y. Booth 201. Spools and bobbins. Rep.: E. G. Crooks, W. S. Taylor, F. C. Steere.

Karl Lieberknecht, Inc., Reading, Pa. Booths 232-234, 257-259. Full-fashioned hosiery machinery, featuring automatic welt turner. Rep.: Albert Friedmann, Erwin Ruckel, Ernest Feustel, H. W. Fricke.

W. C. Lipe, Inc., Syracuse, N. Y. Booths 404-405. Carhart spring-needle

knitting machine. Rep.: R. H. Carhart, C. W. Simmons, E. S. Mariotte.

Wm. A. P. MacKnight, Philadelphia. Booth 353. Cotton yarns. Rep.: William A. P. MacKnight, Frederick Etherington, Burton Etherington, Jr.

Markhem Machine Co., Keene, N. H. Booths 311, 318. Label, box, and fabric printing equipment; marking ink; solvent cleaner. Rep.: C. A. Putnam, Carl E. Putnam, David F. Putnam, Otto B. Meyers, Harold D. Milton.

C. R. McGinnes, Reading, Pa. Booth 356. Combed yarns spun by Ruby Cotton Mills, Inc.; carded yarns spun by Ranlo Mfg. Co.; merino yarns spun by Ingram Spinning Co., Inc.; thrown silk produced by W. F. Hofford, Inc.; mercerized yarns produced by Green River Mills, Inc. Rep.: T. L. Wilson, D. R. LaFar, Ernest Jones, W. F. Hofford, C. R. McGinnes.

Merkel Bobbin Co., Allentown, Pa. Booth 175. Bobbins for silk and rayon throwing, with fiber, bakelite, aluminum, and stainless-steel heads. Rep.: W. Everitt Kiefer, George McGee.

Merrow Machine Co., Hartford, Conn. Booths 377-378, 403. Class A sewing machines for overseaming and over-edging at high speed; also standard line of sewing machines.

Clarence L. Meyers & Co., Philadelphia. Booths 340-341, 368-369. Cotton, Durene, and novelty yarns. Rep.: Clarence L. Meyers, Milton M. Meyers, Gustave C. Bellenberg, George E. Maurer, Daniel Strauss, Ernest W. Fowler, Louis Eschelbach, Harry J. Riebe, Charles E. Bender, H. W. Schrader.

Miller Co., Meriden, Conn. Booth 166. Fluorescent daylight lighting fixtures. Rep.: L. M. Grawemeyer.

L. P. Muller & Co., Philadelphia. Booths 312, 317. Cotton yarns. Rep.: H. D. Muller, H. G. Harper, J. L. Muller, W. R. Biggs, W. J. Scott, H. R. Penington, E O. Penington, J. T. Miller, F. M. Shipley.

Napthole, Inc., Boonton, N. J. Booth 56. Line of dyeing and finishing assistants for cotton, wool, and synthetic textile fabrics; also piece goods, hosiery, etc., dyed and finished with these specialties. Rep.: A. L. Watson, W. A. Cummings, H. A. Carman, J. A. Brohel.

Narrow Fabric Co., Reading, Pa. Booths 275-276, 293-294. La-ce-lastic for underwear and hosiery. Rep.: Jean L. Welch, J. W. Sweeney, George Dudley.

National Association of Hosiery Mfrs., New York. Booths 73-75. Convention headquarters.

National Association of Hosiery Mfrs., New York. Booths 415-417, 438-440. N.A.H.M. snag-resistance tester; exhibition of research problems and activities. Rep.: E. Max Schenke, Howard E. Shearer.

National Carbon Co., Inc., Carbon Sales Division, Cleveland. Booth 57. Accelerated fading unit incorporating 3-phase carbon arc; carbon, graphite, and Karbate pipe, fittings, and valves. Rep.: C. G. Ollinger, F. Hohmeister, J. S. Copley.

National Marking Machine Co., Northside, Cincinnati, Ohio. Booth 62. Visible and invisible indelible marking for textile fabrics; also machines for applying. Rep.: Leonard S. Smith, Jr., Richard F. S. Hanley, Frank Sell.

National Vulcanized Fibre Co., Wilmington, Del. Booths 162-163. Products made of vulcanized fiber and Phenolite laminated Bakelite. Rep.: T. B. Baldridge, J. G. Beasten, J. K. Johnston, H. C. Hackett, F. I. Crow, H. T. Lundquist, J. S. Tatnall, J. O. Otis.

North American Rayon Corp., New York. Booths 110-113. Knitted fabrics and garments, featuring Nardura, high-strength rayon yarn. Rep.: E. E. Steidler, Marie Collier, J. J. Merlein, R. C. Urban.

Onyx Oil & Chemical Co., Jersey City, N. J. Booth 218. Dyeing and finishing compounds for hosiery, underwear, and knit goods; featured are recently introduced Xynomines, and snag-proof finishing agents for Nylon. Rep.: A. C. Mackey, Cliff Myers, J. W. Huber, C. E. Maher, Earl Schroeder, C. D. Ehrengart, L. P. Brick, H. H. Mosher.

Pairpoint Corp., New Bedford, Mass. Booth 339. Paper carriers. Rep.: P. I. Fletcher, W. G. Pierce, C. N. Ricketson.

Paramount Textile Machinery Co., Chicago. Booths 266-267, 283-286. Hosiery drying machines, inspection machines, forms, and tables; looper attachments. Rep.: Henry Pope, L. H. Oswald, T. W. Prosser, L. S. Kleinfeld, J. C. Fenley, W. L. Coggins, W. H. Albertson, O. A. Siegel, T. K. Long.

Pearl Button Industries, Inc., Muscatine, Iowa. Booth 393. Pearl buttons.

George B. Pfingst, Inc., Philadelphia. Booths 370-371. Tram silk for full-fashioned and seamless hosiery knitting. Rep.: Geo. B. Pfingst, Bart Pfingst, J. P. Reynolds, Jay J. Jacobs, Arthur W. Bachman, Carl Wagner, Jr.

Philadelphia Drying Machinery Co., Philadelphia. Booth 209. Drying, carbonizing, tentering, twist-setting, and extracting equipment. Rep.: W. W. Sibson, H. O. Kaufman, W. W. Sibson, Jr.

Philadelphia Metal Drying Form Co., Philadelphia. Booth 105-AA. Hosiery drying-form equipment, rotary boarding machines, tissue inserters, envelope fillers; also new Nylon hosiery pre-boarding machine which may be seen in operation, by appointment only, at Gotham Silk Hosiery Co. Rep.: Paul Guggenheim, Joseph Seligman, Richard Guggenheim, John E. Fox.

E. W. Pike & Co., Elizabeth, N. J. Booth 45. Illuminated magnifiers and microscopes; pick-counting glasses. Rep.: E. W. Pike, E. W. Pike, Jr., Edw. J. Tague.

Proctor & Schwartz, Inc., Philadelphia. Booths 268-269, 277-278, 291-292. Automatic machine for boarding, drying, stripping, piling, and counting hosiery. Single-operator pre-boarding machine for Nylon hosiery. Rep.: C. T. Griffith, Charles Tiers, William Merrigan, Thomas Schermerhorn.

Quaker Chemical Products Corp., Conshohocken, Pa. Booth 419. Synthetic-resin rayon-warp-sizing compound, cation-active softener, silk-soaking oils, synthetic detergents, cotton-warp-sizing compound, Sanforizing oils, etc. Rep.: E. Niessen, A. Johnson, L. O. Benoliel and Messrs. Ecker, Brown, Finkel, Kopple, Zametkin, Gilmann.

Rayon Publishing Corp., New York. Booths 89-90. Textile publishers.

Reece Button Hole Machine Co., Boston. Booths 381-382. Button hole machinery for producing rounded-end, oval button holes for narrow-border sweaters. Rep.: F. O. Paul, F. A. Reece, Jr., J. H. Pikul, and others.

Robert Reiner, Inc., Weehawken, N. J. Booths 410-412, 443-445. New automatic heeler, high-speed warping and beaming equipment, pneumatic tension device. Rep.: Robert Reiner, Fritz Lambach, Paul A. Sullivan, Ferdinand Loeffler, August Schoenenberg.

G. Reis & Bro., Inc., New York. See Herst Sales Co.

Charles Reitzes, Philadelphia. Booth 430. Saxmayer machine for tying bundles, boxes, hosiery, skeined silk, etc. Rep.: Charles Reitzes, H. L. Reitzes, Joe Block.

Reliance Electric & Engineering Co., Cleveland. Booths 432-433. All-electric, adjustable-speed drive for a-c. circuits, splash-proof motors, gearmotors. Rep.: Paul W. Arnold, E. E. Helm, Elwood H. Koontz.

Republic Steel Corp., Cleveland. Booths 46-49. Products for textile industry fabricated from Enduro stainless steel. Rep.: C. C. Snyder, Geo. W. Hinkle, E. S. Dehn, R. S. Patterson.

Rose Mills, Inc., Philadelphia. Booth 194. Novelty twisted yarns for all uses and of all fibers; new hollow-filament rayon yarns. Rep.: A. G. Adams, Geo. Birkenbach, Julius Green, H. G. Schnitzler, Edward Stotter, John H. Parker.

Royersford Needle Works, Inc., Royersford, Pa. Booths 399-400. Spring-beard needles, sinkers, dividers, knocking-over bits, jacks, etc. Rep.: Ferdinand Heller, Fred Heller, R. W. Breidenbach, Bob Baker, Chas. Bortz.

San-Knit-ary Textile Mills, Philadelphia. Booth 44A. Dye nets for hosiery, and soaking nets for silk throwing. Rep.: Paul D. Dalsimer.

Sauquoit Silk Mfg. Co., Inc., New York. Booth 436. Silk hosiery yarns. Rep.: Thomas Cowan, Anthony I. Gavaghan.

Scholler Bros., Inc., Philadelphia. Booths 252-253. Line of soaps, softeners, sulphonated oils, specialties, and finishes for hosiery and knit-goods trades; samples of fabrics treated with these products.: Rep.: L. M. Boyd, W. A. Daniel, Wm. Jackson, Jr., H. A. Miller, E. S. Atkinson, J. F. Noble.

Scott & Williams, Inc., New York. Booths 130-141. English broad-rib Komet-type machine, both regular and links-and-links types; automatic wrap machine, with new striping attachment; 36-gage automatic machine for light-weight work socks and large-volume, low-price socks; automatic rib-body machines; also assortment of finished hosiery, underwear fabrics, and finished garments made on these machines.

Sees & Faber Co., Inc., Philadelphia. Booths 18-20. Full-fashioned hosiery-mill specialties and textile-mill supplies. Rep.: Chas. Rudderow, Erwin Raickle, Art. Beetle, Jos. Dietrick, F. Buckley.

Sellers Mfg. Co., Saxapahaw, N. C. Booth 437. Mercerized yarns, and fancy combination yarns for half hose. Rep.: B. E. Jordan, F. M. Shannonhouse, Jr., R. H. Griffith, D. F. Swain, J. J. Klumpp, Harry Stelter, Wm. V. M. Fawcett, Coles Hegeman.

Shell Oil Co., Inc., New York. Booths 413-414. Petroleum lubricants, solvents, stainless needle oils. Rep.: F. C. Rule, R. U. Denkins, R. L. Martin, L. W. Catling, R. M. Terry, J. S. Norton, W. S. Boykin, M. G. Gleason, N. Ford.

Shoe Form Co., Auburn, N. Y. Booth 398. Hosiery, neckwear, and shoe display forms; hosiery savers. Rep.: Owen W. Comstock, Gordon N. Tutton.

Singer Sewing Machine Co., New York. Booths 226-229, 229AA, 262, 262AA, 263-265. Sewing machines of interest to knitwear and hosiery manufacturers. Rep.: J. P. Baiter, H. C. Morehouse, J. C. Lewis, A. H. Baiter, Roy Moutaw, J. W. Daley, H. Hacklander, L. Peak, R. D. Mohney, J. P. Weis, and others.

Smith Drum & Co., Philadelphia. Booths 27-35. Hosiery, skein, and package dyeing equipment. Rep.: Harry S. Drum, William C. Dodson, James E. MacDougall, Joe M. Ballentine, Perry M. Parrott.

Soabar Co., Philadelphia. Booth 22. Machine for printing and attaching hosiery tickets to merchandise. Rep.: John E. Fox, George W. Henry, Jr., Oscar Turran, Clyde B. Hutchinson, James M. Kyte.

Sonoco Products Co., Hartsville, S. C. Booths 96-99. Line of paper cones, tubes, spools, etc., for textile mills. Rep.: W. B. Broadbent, W. A. Biggs, G. K. Lewis, J. W. Hillsgrove, E. J. Cotter, H. P. Lamarche, C. H. Campbell, E. S. Reid, P. F. Williams, J. A. Durkin.

Southern Knitter, Charlotte, N. C. Booths 77-78. Textile publishers.

Southern Mercerizing Co., Tryon, N. C. Booths 221-222. Mercerized yarns. Rep.: W. C. Ward, Joseph J. Payson, W. Herbert Smith, John W. Simpson, Jr., R. D. McDonald, George T. Hutchinson, B. F. Corvin.

Southern Textile Machinery Co., Paducah, Ky. Booths 374-375, 406-407. Loopers for single or two-thread overlocking stitch; for single and two-thread in-and-out lockstitch for gore or heel pocket looping of single-unit work; also for coarse, heavy work. Rep.: J. T. Balthasar, Charles Holcomb, T. H. DeSpain, Aubrey George.

Morris Speizman, Charlotte, N. C. See Interstate Textile Equipment Co.

Standard-Coosa-Thatcher Co., Chattanooga, Tenn. Booths 197-198, 219-220. Natural, bleached, and dyed cotton yarns of various types, including Durene, combed Sak, Selo, Preemo, combed peeler; also threads. Rep.: J. S. Verlenden, R. J. Mathewson, W. H. Thatcher, W. S. Lawson, M. A. Henderson, C. F. Smith, N. P. Murphy, J. P. Rickman, J. O. Foil, E. R. Dillmore, William M. Hall, Robt. B. Lewis.

Stop-Motion Devices Corp., Brooklyn, N. Y. Booth 203. Electrical stop-motions for knitting machines, needle protector, and needle detector. Rep.: E. Vossen, N. J. Tellerman, A. Malluck.

Alfred Suter, New York. Booth 429. Hosiery abrasion tester, lubricity tester, skeinette machine, package density tester, twist tester, yarn-numbering balance. Rep.: Alfred Suter, Robert Nigrin.

H. Sweetbaum & Co., New York. Booth 418. Silk and rayon yarns. Rep.: H. Sweetbaum, Norman Becker.

Synthane Corp., Oaks, Pa. Booth 167. Bakelite-laminated products and technical plastics. Rep.: J. K. Johnson.

Textile Age, New York. Booths 84-85. Textile publishers.

Textiles, Inc., Gastonia, N. C. Booths 384-385. Cotton yarns. Rep.: A. W. Latta, and others.

Textile Machine Works, Reading, Pa. Booths 300-304, 325-329. Knitting machines and accessories. Rep.: R. W. Weaver, H. Printz, P. Kroener, E. Shoemaker, E. Kalbach, N. E. Richards.

Textile Trimming & Boarding Machine Co., Inc., Reading, Pa. Booths 4-6. Machine for trimming loose ends on hosiery, movable conveyors for transferring men's half hose, boarding machinery, finishing tables. Rep.: F. Y. Kitzmiller, H. E. Stout, S. W. Freyberger.

Textile World, New York. Booths 114-117. Textile publishers.

Torrington Co., Torrington, Conn. Booths 313-316. Line of needles and sinkers. Rep.: W. C. Thompson, W. L. Morgan, W. W. Blelock, J. H. Lingley, A. R. Brown, W. C. Wiechardt, H. D. Blake, Clarence Rowe, F. G. Stubbs.

E. W. Twitchell, Inc., Philadelphia. Booth 168. Hosiery and textile packaging materials, including samples of packages and merchandising plans for Nylon hosiery. Rep.: N. T. Gates, C. W. Middleton.

Underwear Institute, New York. Booth 88. Institute headquarters.

Union Special Machine Co., Chicago. Booths 305-306, 323-324, 330-331,348-349, 360-361, 386-387. Sewing machines for knit goods, hosiery, etc., including hosiery seamer, lockstitch machine, machine for fagotting and Picoetta work, overseaming machine, and others. Rep.: T. S. Whitsel, C. S. Thompson, N. V. Christensen, A. E. Brauch, A. J. Feigel, P. T. McLendon, C. E. Stevens, W. E. LeRoy, L. F. McGwier, O. S. Bachelor, Wm. Bleicher, T. M. Murphey, E. E. Gratsch, and others.

U. S. Gutta Percha Paint Co., Providence, R. I. Booth 251. Industrial paints of all kinds for use in knitting mills. Rep.: H. F. Eastwood, J. F. Small, P. R. Gilmore, W. M. Moore.

U. S. Ring Traveler Co., Providence, R. I. Booths 176-177. Bronze and steel travelers for the textile industry, with several special patented features. Rep.: M. Lee Bolton, Herbert J. Smith, Torrence L. Maynard, Amos M. Bowen.

United States Rubber Co., New York. Booths 106-109. Lastex and Laton yarns; also hosiery, fabrics, and garments containing these yarns. Rep.: Paul Linke, Wm. H. Barnhardt, Joseph Fodor, Patrick Kiernan, James Clausen, D. McNicol.

United States Testing Co., Inc., Hoboken, N. J. Booths 420-422. Testing equipment. Rep.: A. L. Brassell, S. B. Walker, A. J. Kellner, W. F. Morgan.

U. S. Textile Machine Co., Scranton, Pa. Booths 26, 26AA, 26BB, 26CC. Throwing machinery. Rep.: A. W. Thomas, P. J. Thomas, Henry R. Bailey, James Marshall.

Universal Winding Co., Providence, R. I. Booths 148-153. No. 50 winders, on silk and rayon yarns; Roto-Coner, winding soft-twist knitting yarns at high speed; No. 99 automatic bobbin winder. Rep.: R. Leeson, E. O. Smith, A. R. Breen, T. L. Cotter, R. L. Chisholm, W. S. Warren, W. J. Quinn, R. M. Mauldin, R. C. Pillsbury.

Valdese Mfg. Co., Valdese, N. C. Booth 358. Knitting yarns—natural, dyed, and bleached. Rep.: E. M. Spencer, Tom Moore, L. P. Guigou, Herbert Smith, Walter Brown.

Van Straaten & Havey, Inc., Philadelphia. Booth 431. Silk yarn for hosiery knitting. Rep.: Charles F. Havey, C. Lee Havey, T. Y. Wilson, M. H. Smith, Bert Berenson, J. F. Monahan.

Venango Engineering Co., Inc., Philadelphia. Booths 236-237, 254-255. Stainless-steel floating and standard type rotary hosiery dyeing machine; stainless-steel package-dyeing machine; new type stainless-steel spindles for packages. Rep.: J. A. Okey, T. T. Balenstein, M. Speizman, R. McDonald, A. Robertson.

Victor Ring Traveler Co., Providence, R. I. Booth 208. Ring travelers. Rep.: E. R. Jerome, J. A. Hull, B. H. Waterman.

Wachsman Sons, Inc., Brooklyn, N. Y. Booth 41. Knitting machine stop-motions.

Westinghouse Electric & Mfg. Co., Philadelphia. Booth 61. Motor and control equipment, fluorescent lighting, and Micarta parts for textile applications. Rep.: J. W. Allison.

Wheeler Reflector Co., Boston. Booth 161. Fluorescent lighting units. Rep.: Roy T. Hardy, H. A. Barnes.

Whitin Machine Works, Whitinsville, Mass. Booths 118-123. High-speed warp-knitting machine; novelty yarn twister. Rep.: J. Hugh Bolton, Charles Sorton, Julius Sirmay.

William Whitman Co., Inc., New York. Booths 242-243. Worsted, merino, cotton, spun rayon, and blended yarns. Rep.: M. G. Decatur, J. J. Devlin, W. A. Fuller, M. H. Horchler, H. C. Leswing, K. N. Merrill, J. K. Robinson, J. L. Stickley, W. C. Strugnell, J. E. Varney, R. J. Walsh, C. J. Welles.

Willcox & Gibbs Sewing Machine Co., New York. Booths 334-337, 372-373. Improved Metropolitan sewing machines designed for use in knit-goods industry; Superlock overseaming machine; automatically lubricated Feldlock machine; Handstitch machine, for producing saddle stitching effects on sport collars and similar garments. Rep.: G. M. Lewis, A. E. Selby, A. H. Weis, and sales representatives.

Thos. Wolstenholme Sons & Co., Inc., Philadelphia. Booth 350. Worsted yarns. Rep.: L. F. Schaeffer, F. S. Krecker, L. F. Schaeffer, Jr.

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H. G. LORD Comments on

Machinery Exhibitions

Every time I go to one of the many textile shows, I am always amazed at the constant progress in mechanical and processing developments. There never will be a time when the textile manufacturing processes remain static for any considerable period.

Even in the brief period of a year, there are all sorts of refinements and new gadgets. The adaptation of the new synthetic fibres to textile machinery and processes accounts for a good deal of the activity in machine development at the present time.

This year there is no cotton machinery exhibition, so TEXTILE WORLD is taking a birdseye view of the developments and new things which would have been shown had there been the exhibition.

Speaking about textile machinery exhibitions, Russell T. Fisher, president of the National Association of Cotton Manufacturers, tells me that the "Transactions" of that Association record a textile machinery exposition in connection with the centenary celebration in Philadelphia in 1876.

The next cotton machinery exposition of which there is any record was held in Atlanta in 1881. The Saco-Lowell Shops has a copy of "The Official Catalogue of the International Cotton Exposition." My associate and long-time partner, Capt. Frank L. Nagle, was office boy for the old Textile Record at that time, and J. W. Ryckman and Mr. Nagle's brother Jim were the owners of the Textile Record and they were very largely instrumental in promoting this Atlanta exposition and arranging for the exhibits. Ryckman was the secretary of the exhibition. Senator Brown of the State of Georgia was the president; Robert Tannehill was first vice president; Mayor English, of Atlanta, and William C. Sibley, a prominent manufacturer of Georgia, were also vice presidents. Edward Atkinson, of Boston, was very much interested in this exhibition and did much to publicize the development of cotton manufacturing in the South.

I do not think there was another cotton machinery exhibition held until 1907, in conjunction with the spring meeting of the American Cotton Manufacturers Association. Arthur H. Lowe, president of the Association, T. Ashby Blythe, Frederick H. Bishop and other mill and machinery men, together with Sam Steele and Charles Clark, of the Textile Manufacturers Journal, and Frank Nagle and myself, were largely instrumental in promoting it. The success of that show led to the formation of the Textile Exhibitors Association by sixty of those interested in the Philadelphia show. Frederick H. Bishop was the first president and Chester I. Campbell was secretary and manager until his death. For a number of years it held annual exhibitions in Boston and there was one held in New York. There have been no exhibitions held in Boston since the depression.

The growth of the cotton industry in the South naturally led to a machinery exhibition being held in that section under the auspices of the Southern Textile Exposition, and now the Greenville Show, which is held every other year, is an outstanding event in the industry and a gathering place of textile men from all over the country and marks the milestones of progress.

H. G. LORD, *founder of Textile World in 1888 and president, Bragdon, Lord & Nagle Division, McGraw-Hill Publishing Co.*